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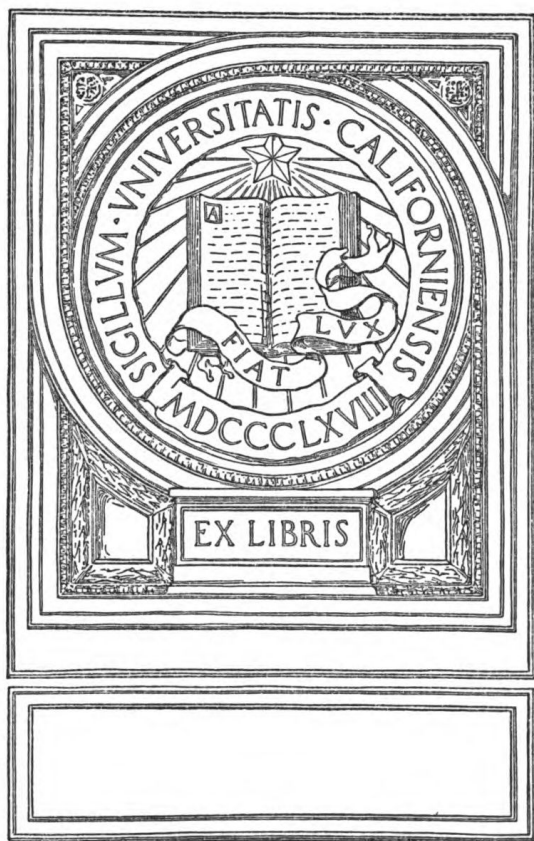
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CAMILLUS



THE STORY OF  
AN AMERICAN SMALL BUSINESS











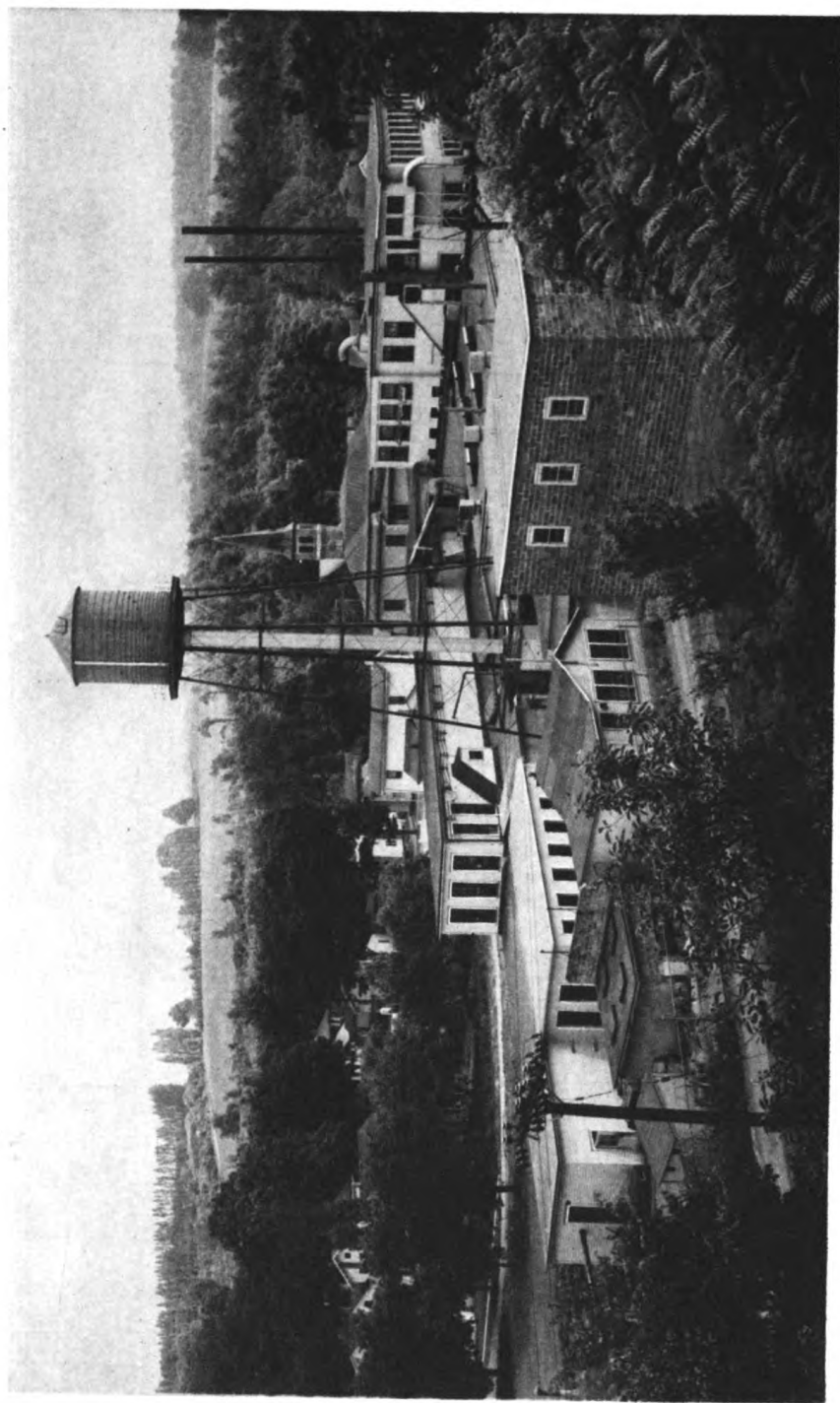
**CAMILLUS**  
**THE STORY OF**  
**AN AMERICAN SMALL BUSINESS**







CAMILLUS



CAMILLUS CUTLERY COMPANY AT CAMILLUS, N. Y.  
*A Partial View of the Plant*

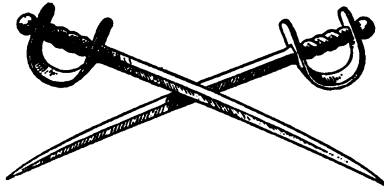
*Business Life in America Series*

# CAMILLUS

THE STORY OF  
AN AMERICAN SMALL BUSINESS

BY  
ALFRED LIEF

*Author of 'Brandeis, the Personal History of an American Ideal,'  
'Democracy's Norris'; editor of 'The Dissenting Opinions of  
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PRINTED BY COLUMBIA UNIVERSITY PRESS  
NEW YORK • 1944

UNIV. OF  
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## *The Village of Camillus*

HERE IS a spot of earth—a village in Central New York—a single cell in the tissue of American life. Here is throbbing growth, unfolded in nature, in man, in men's hopes and dreams and enterprise. This community with its elms, dwellings, and farmlands nestling in a ripple of hills along the Mohawk Valley emerges as a living organism functioning for American destiny.

For the drama of the Village of Camillus is in miniature the social history of our country. Out of this pastoral setting stems a story which concentrates the development of modern industry, democratic striving, and an arsenal of national service. With a change of place and circumstance it might be the saga of thousands of other spots, each influenced by the shifting tides of economics and moulded by political forces, and within those limitations directed by some bold spirits. Hence Camillus holds both the appeal of the universal and the fascination of the particular.

The quaint name of Camillus owes its origin to the classical taste of the state's surveyor-general, who in 1799 laid out into townships a military tract created by the legislature—from land vacated by hostile Iroquois—for settlement by Revolutionary War veterans and their families. Entering place-names on his map, the surveyor chose to call this area, midway between Albany and Buffalo, after

TO VIRI  
MAGNIFICENTIAE  
MARCUS FURIUS

Fortunately Camillus was situated on a body of water. Nine Mile Creek, flowing north through the village towards Seneca River, was in fact a vital element. It furnished waterpower for a combination grist-and-saw mill in 1806 and served also as an artery—or rather, modestly, as a capillary—of commerce.

Essentially industry was self-contained. The saw mill, slicing up oak and maple, operated for local building needs. Another mill along the creek carded the neighbors' wool and made cloth for their own wear. The business of flouring, however, was significant enough to cause a con-

temporary pamphleteer to record that "wheat is sold for money."

Trade could grow only with communications, so a hearty blessing was given Squire Munro and his sons for constructing that part of the east-west Seneca Turnpike which passed through Camillus and over the bridge. A toll road, according to custom, it brought stage coaches rattling in from Buffalo and Albany, heralded by the blast of a horn as the driver reached the crest of the hills. At least fifteen stages a day, drawn by double pairs of horses, stopped in the village and added considerable life to the community.

By 1820 the isolation of Camillus had drifted into memory. Canvas-covered wagons laden with produce and products trundled off in season, supplementing the shipments by sleigh. The wagoners striding alongside teams of four to eight horses were picturesque agents of an economy which fostered rural manufacturing, so the loads might be lighter, less bulky, more valuable. Although there were now a number of grist mills grinding on the creek, their capacity was taxed and the waterpower was insufficient for further expansion.

With good reason high-pitched enthusiasm greeted the opening of the Erie Canal in 1825. This event meant to the surrounding territory an era of greatly increasing business. To Camillus it brought a boom. Enterprising citizens at once organized the Nine Mile Creek Association to divert some of the flow of the creek into a feeder for the

Erie Canal. This gave the village a direct route to that wonderful water highway and the world beyond, and boats plying the canal used the feeder as a turning point. What is more, by building a millrace two and one-half miles long, with a twenty-five-foot drop, the sponsors provided added means of manufacture.

One of the new establishments making use of the augmented power was a woolen knitting mill, which produced a very necessary article—underwear. By 1835 the village had nearly thirty other industrial units. Besides grist and saw mills, carding and fulling mills, plaster works, and a wagon shop, there were two distilleries, three tanneries, and four asheries for making lye and potash. Outside capital and mechanics were attracted to this thriving center. Farm crops were good, especially wheat, corn, and apples; dairy products were plentiful. Also, farmers in distant districts brought their surplus here to market, for a great canal business was being done, and the line of wagons outside the local grain warehouse often was so long that no hitching place was left for late-comers.

For a number of years Camillus was the banner town of Central New York, with a population as high as 750, intensely jealous of nearby Syracuse. Naturally it became a stop on the railroad line which was laid down in 1838, the horse-drawn Syracuse & Auburn, one of the many short-haul roads that darted about the state, not yet feasible for extensive freight use. Grain and flour were still shipped out of Camillus mainly by canal, to markets along

the Erie and the Oswego, even when horsepower gave way to puffing, woodburning engines.

But the age of steam had arrived, and the village caught up with it when a sign was painted on a building situated at the north side of the bridge, just between the creek and the feeder. The sign read: "Novelty Steam Mills." The new company boasted a 40-hp upright steam engine to be used for flour making and an 8-hp horizontal steam engine for sawing.

By the same token rural industry came to the verge of a sharp decline. Mechanization of the American landscape sped up the pace of areas near and far and gradually deprived Camillus of the benefits of geography. The turnpike had become outmoded as a popular route of mid-state travel, and the Camillus & Syracuse Plank Road Company was formed in 1850 to supersede it—one of nine plank roads which were to converge upon Syracuse and contribute to that town's growth as a trading center. As far as Camillus was concerned, the effort was futile. Railroad consolidation linked the short lines and Cornelius Vanderbilt united the New York Central with his Hudson River Railroad, thus connecting New York City and Albany with the Great Lakes by continuous rail. And the grand Erie Canal, which not long before had been acclaimed as a providential channel of prosperity, came to shallow significance.

The rise of Syracuse, with its superior railroad facilities, sapped the prestige of Camillus. No more was the village a collection depot and shipping center for its en-

virons. But there was a deeper cause of depression: the Civil War occasioned the exploitation of the Western plains and the development of wheat-growing on a vaster scale. This new competition, legitimate to be sure, was abetted by unfair discrimination in railroad rates and the penalizing of short hauls. York State farmers and wool growers suffered, and by 1870 the grain business of Camillus had shrunk to a tiny kernel.

The trail of the Industrial Revolution which the poet Oliver Goldsmith lamented in "The Deserted Village" wound round the world. Upheaval brought readjustments and tested men's ingenuity. Camillus lost one-third of its population and became a suburban dependent. It took to mixed farming, shipped milk to the growing numbers in Syracuse, and set up brickyards beside the feeder canal, also to supply Syracuse. Attempts to maintain industry on a substantial basis met with a hard fate.

Not that resourcefulness was lacking. The indifferent success of the Novelty Mills (which were soon converted into a distillery, likewise short-lived) and of other early flouring works was forgotten in the glory of the first complete roller flouring mill in this part of the state in 1883. Four years later it burned down. Fire was a persistent enemy, accounting for much destruction in the annals of the village. Also begun in the '80s was a chair factory, making good use of the local supply of wood.

Apparently the introduction of new skills was to be the salvation of the locality's economic life. The chair factory

went up on the long-abandoned site of the Novelty Mills, between the feeder and the creek. A three-story plant, it prospered and gave employment to forty hands. But after running a few years it was destroyed by fire. A short time later the site was bought by Edward D. Sherwood, son of the first president of the village, Gaylord N. Sherwood, and he put up another chair factory. This, too, fared well—until it burned down within a year.

Attention is focussed on this site because here sprang up the industry which ultimately brought recovery and renewed importance to Camillus. It had remained a forsaken, abandoned place until the spring of 1894, when Charles E. Sherwood, another son of Gaylord, erected a building to be operated as a penknife factory.

The McKinley Tariff of 1890 had placed a high duty on steel manufactures, including knives, to foster domestic production. Without experience in this field, Sherwood took into partnership his brother-in-law, Denton E. Bingham, trained in the cutlery craft of Sheffield, England, and lately employed in a Connecticut knife plant. The new project was hailed as the promise of a boon to the community, and in the summer of '94 the *Marcellus Observer* observed: "This factory is preparing to do quite a business." In October a proud paragraph appeared:

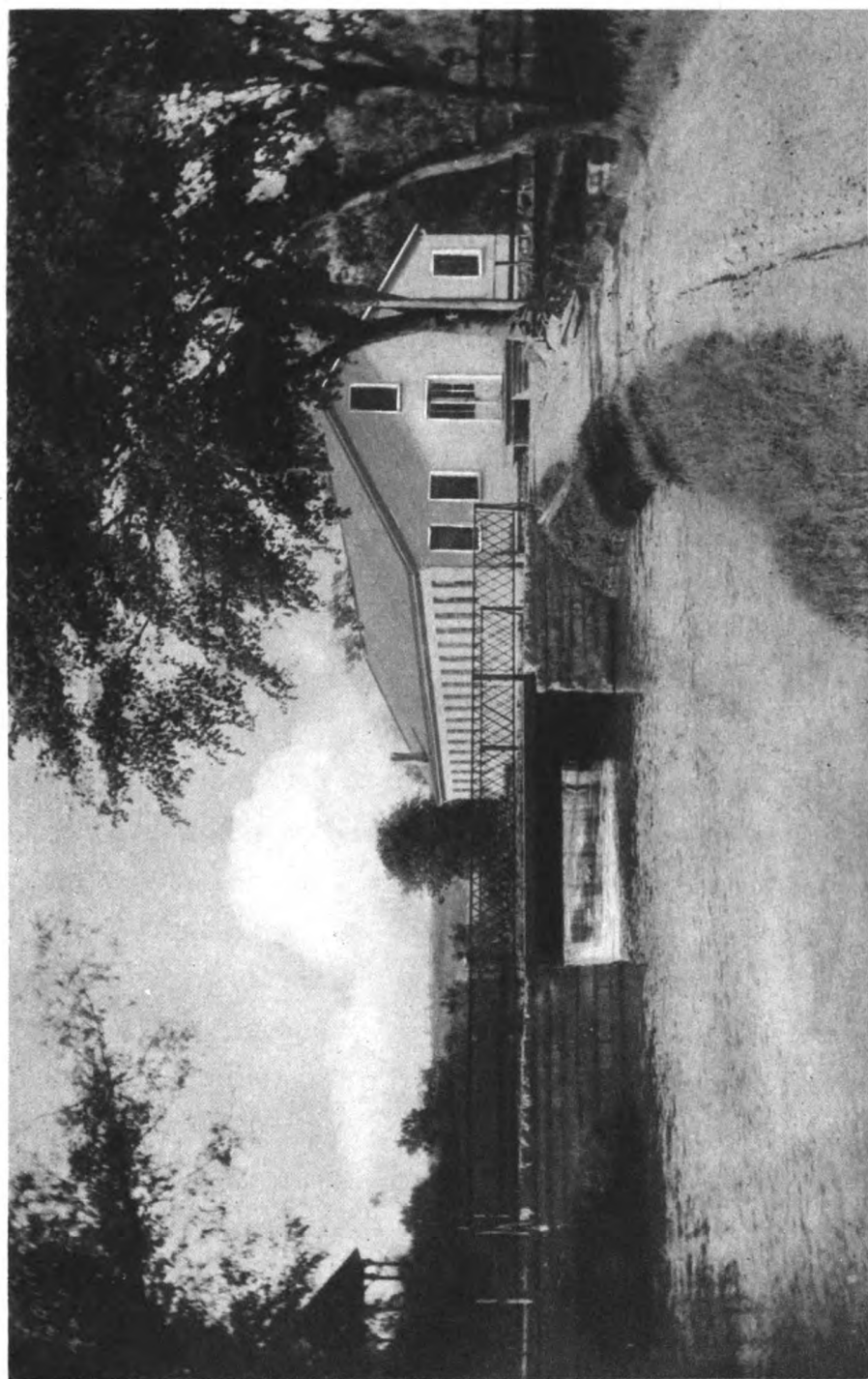
*The knife factory made their first shipment of knives on Wednesday. They sent off some thirty dozen first class work.*

And so the Camillus Cutlery Company was born.

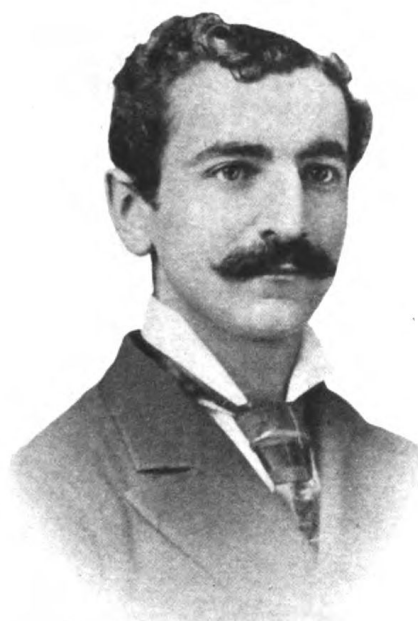


Those first years, however, were on an unsure footing. Mr. Sherwood found it desirable to lease the plant to one of his customers, a Rochester firm, while he remained as manager. This arrangement continued until the lessee was tempted away in '98 by an ambitious town, closer to Rochester, which offered a factory free of charge. For a while the Camillus plant was shut down, and then Mr. Sherwood took new courage and reopened it, but without much luck despite the fact that the cutlery trade was hungry for American goods.

It was in 1902 that another customer, the New York firm of Adolph Kastor & Brothers, who were the country's most important importers of cutlery, came to Camillus.



THE CUTLERY IN 1902  
*Feeder Canal in Foreground*



ADOLPH KASTOR  
*As a boy beginner in hardware 1870*  
*And a young importer in 1882*

## II

### *The Name of Kastor*

THIS was the turning point, not only for Camillus but for a business obliged to change its course with the shift in trade winds. Adolph Kastor had founded his firm in 1876 and developed it with an instinct for the right policy. Besides insight and foresight he possessed solid Victorian virtues which were exercised in the spaciousness of democracy. And therein lies a tale of progress as typically American as the freedoms on which our nation rests.

Like so many others, before and after, who fared well with the opportunities this country offered (and made their contributions in turn), Adolph Kastor came here as an immigrant boy. In 1870, a lean lad of fourteen with blazing eyes and a precociously thoughtful brow, he left his native Wattenheim in the Rhineland—a town where his great-grandfather had been born when the American Colonies were in their adolescence.

The Kastor line had won an esteemed place in that community. Father, who was to serve on the common council more than thirty years and have a public square named after him, was in comfortable circumstances—a landowner and cattle dealer. But something prompted the boy, after having finished private schooling at the head of his class, to forsake substantial advantages, break strong family ties, and look beyond the horizon.

The boy could not possibly have regarded himself a symbol of unrest and pioneering. His craving to achieve was intensely personal. And luckily he had a persuasive Uncle Aaron for a champion. This brother of his father's had blazed the trail to the United States back in 1841, settling in Natchez, Mississippi, and later becoming a partner in a New York house of hardware jobbers which did extensive business in the South. Uncle Aaron frequently returned to Europe on buying trips and he overcame the reluctance of Adolph's parents to let the youngster go, promising a chance to grow up in the business. The pain of parting may well go unmentioned . . . but a memorable note was the mass turnout of all the villagers as they came to say goodbye.

Accompanied to the French border by his father, Adolph traveled on to Paris and there feasted on the romantic sights with a schoolboy's appetite. Over the peace of Europe hung the shadow of Bismarck, and the night train to Le Havre was crowded with French troops. Any hour war might break loose between France and the North German Federation. While waiting in Le Havre for a ship from Hamburg, Adolph attended Friday evening services in a synagogue where a prayer was said for the French army, and he, the young stranger in the back row, silently offered his own prayer according to the dictates of his loyalties. His ship, the last German vessel to leave port, pulled out the next day and was only one day at sea when the Franco-Prussian War began.

The crossing took almost two weeks. Uncle Aaron met

him at the pier in Hoboken and took him directly to the store on Warren Street, New York, which was to afford his training in American business. Arrangements were made for him to live with the family of one of the clerks in their house uptown. In these kindly home surroundings Adolph regained his sense of security. Nights he attended school and after class hurried over to the opera house nearby to enjoy good music (at rates reduced after the first act). Love of music was a part of his heritage. So was discipline; he managed his affairs as a model of earnest propriety, thrift, and ambition.

In his uncle's firm of Bodenheim, Meyer & Company he started at the literal bottom—the sub-basement, where he was assigned to cow chains. In time he advanced—to the first basement. Here he took charge of shelf hardware and laid out orders. Later it was guns and cutlery. This was a hectic, one-season business. July-August-September carried the rest of the year, and Adolph had arrived late in July, in the thick of it.

The business was pretty much diversified—padlocks, currycombs, all sorts of mechanics' tools, saws, files, hoes, cornmills, log chains, and a host of other articles, most of them imported. Uncle Aaron made an annual trip to England, Belgium, and Germany. The firm was not particularly prosperous; the margin of profit was small in sharp competition for the Southern trade. Turnover reached \$400,000 for the first time in 1872, and never grew bigger.

The panic of 1873 settled its downward course. With

the death of one of the partners that year the business was continued as Meyer & Kastor. A compact organization of competent men, all of fine character—the buyers, travelers, men in the store and office—yet the results were disappointing. Young Adolph thought he discerned the reason. He had learned the value of all the lines of merchandise, gained experience in handling customers, run to the bank with bills of lading, and acquired a rounded knowledge of each branch of the business. He even ventured to the Philadelphia Centennial Exposition in 1876, but made few sales. The trouble, as he saw it, was that “the firm represented everything in general and nothing in particular.” It failed. By the end of September it liquidated its debts and ceased to be.

On October 1, 1876, Adolph Kastor was in business for himself. He was twenty. He set up store on Canal Street with very little stock, assisted by his older brother Nathan, who had recently arrived in this country, and abetted by an indulgent landlord. Like the former firm, they sold general hardware to retailers. Uncle Aaron was still in the picture and bought cutlery for them in Europe.

When Adolph was twenty-three he first visited Sheffield. Lightly armed with capital, he bought with special care and dealt only with smaller manufacturers to pick up goods at what he deemed the right price. Feeling he had done his best, he went up to London for a look at the historic spots and crossed over to Germany for a

homecoming. He realized he had not attained any success despite hard work and adherence to the copybook maxims. Rather, there was a sense of guilt in not having already reached the heights. But his happiness on seeing his parents again, and his brothers and sisters, their warm faith in him, and encouraging visits with numerous relatives in various towns nurtured a determination to accomplish something he and they could be proud of.

Diligence did not prove to be the simple recipe for laurels. Capital was still limited, buying trips to Europe had to be made each year. Sales were small, on close margin, to retailers who ordered piecemeal. Orders would arrive in the morning, merchandise not in stock would be bought locally in the afternoon, and the goods would be shipped out that night. Adolph accepted financial help from his father and borrowed from other relatives, but he paid them out and managed by stringent economy to drift along.

A fortuitous event in 1883 was Adolph's meeting up with a German manufacturer of pocketknives enroute home from Cuba. He bought this man's samples and took them on the road. In St. Louis, Chicago, Cincinnati, and Louisville he obtained orders on the samples, and this led to an extensive import business in German knives. The next year Adolph was married and went on a honeymoon abroad, where he made strong connections with English and German cutlery makers.

The firm now occupied a definite place in the cutlery



field. It switched to selling imported goods to jobbers. It was alert to every occasion. A few years more and the Kastor brothers were prospering.

By 1887 there were four of them in the business. Adolph had brought over his two younger brothers. Nathan set up a buying office in Solingen, the German center, and remained there; Sigmund and August were trained to call on customers in smaller cities, while Adolph covered the larger cities and took import orders in addition to running the office in New York. They became so big, they carried more pocketknives in stock than all other importers combined and moved into an eight-story building on Duane Street.

The McKinley Tariff of 1890 restricted the market for a time. But in 1894, after the second election of Grover Cleveland as President, Adolph anticipated a reduction in the duty and arranged with a German manufacturer to desist from direct marketing here by signing a contract whereby Adolph Kastor & Brothers guaranteed to take his full output. This move strengthened the firm's position as a source of merchandise.

Another factor which increased the Kastors' importance in the trade was Adolph's astuteness in getting his German manufacturers to forego tradition and modify their patterns in accordance with American tastes. He showed them what to do.

The business grew. Large orders were obtained on the

strength of (1) ability to deliver the goods, (2) maintenance of quality, and (3) confident, persuasive salesmanship based on that high standard. The firm was solid and entrenched.

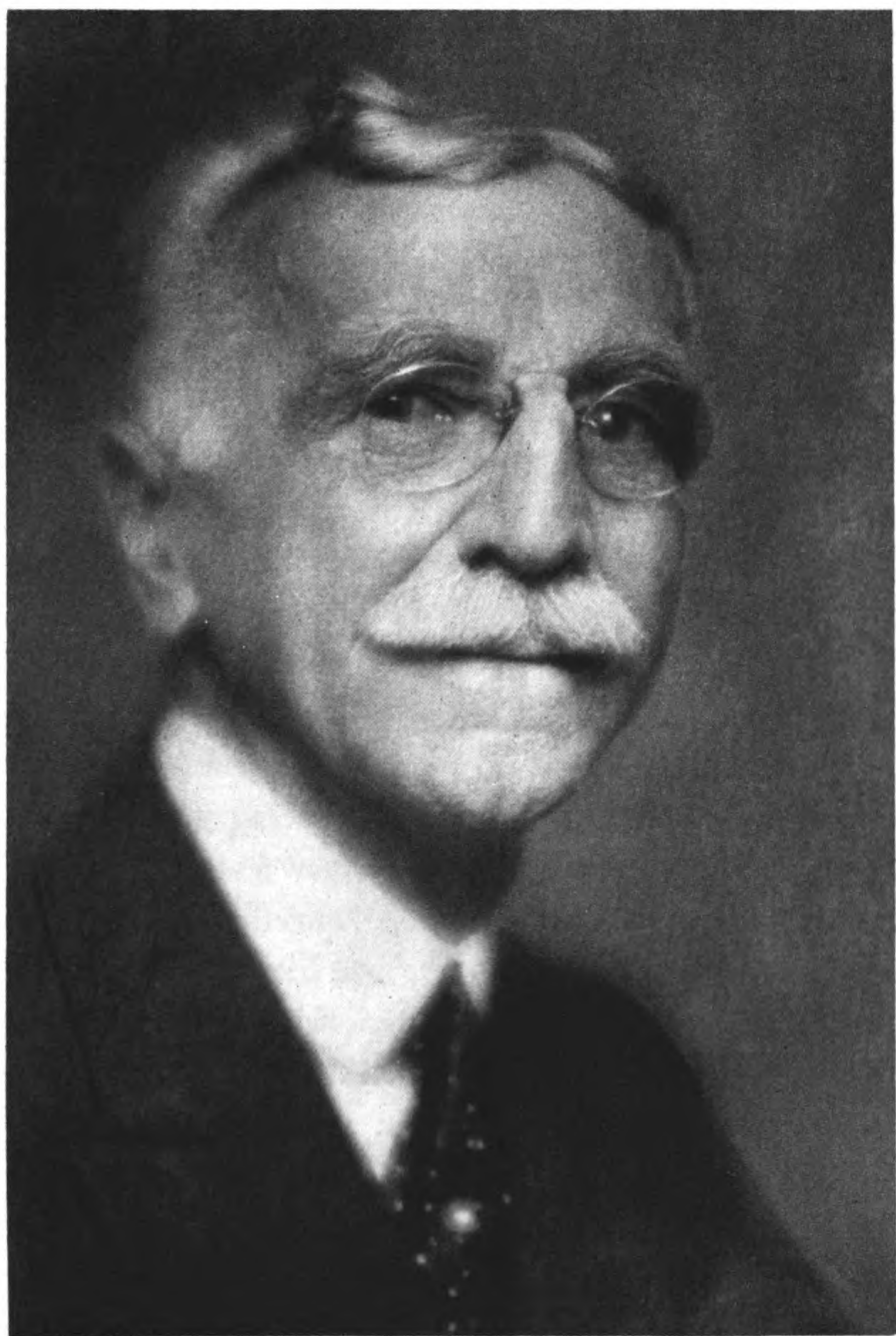
Then a political change occurred. The Dingley Tariff of 1897 raised an obstacle to importation as high as 98.52 percent (specific and ad valorem rates combined). So the solid rock had to fly.

Stated simply, the problem was this: the great demand was for medium-grade merchandise, the duty made such imports too costly, and what little domestic manufacture there was did not suffice. The Kastors needed goods. They decided to make them.

The first venture was in the form of a part-interest in a shears factory in Connecticut. This plant remained in operation several years and yielded experience—not much else. When it was given up, however, its water-power facilities were sold to a public utility company, so that the purchase price was recovered.

One of the few American pocketknife factories which Adolph Kastor could tap for a meager supply was the one at elm-shaded Camillus. Plodding along with about twenty cutlers, turning out fifteen different patterns, it offered the possibility of stepped-up production under proper financing. The protective tariff on steel products was undoubtedly a fixed feature of American policy; the rates might go even higher. While Mr. Kastor did not

believe in planning too far ahead, well aware of the tides of history, mixed with caution in his makeup was enterprise. In 1902 he went up to Camillus, laid down cash, and bought the plant. From that point on the command was forward—forward to progress in the technique of knife-making.



ADOLPH KASTOR  
*Founder of Adolph Kastor & Bros. and  
First President of Camillus Cutlery Company*



# THE VIKING HUNDREDS

### III

## *How Knives Were Made*

WHEN Adolph Kastor took over the small plant at Camillus each cutler, performing virtually every operation himself, sat at the top of the grinding wheel and crouched over, blade in hand, as the sandstone revolved away from him. This was the traditional Sheffield way. Not much later the grinders were working at the bottom, and the wheels ran towards them. This seemingly simple difference dramatized a change in technique which was all-important to success.

Chiefly, what took place was a revolution in the other sense. The twentieth century needs of a large country—an appealing price for a product made by skilled men earning a higher wage than their counterparts in Europe—could not be reconciled with a method which required almost two hundred operations in the making of a single knife. Division of labor and the introduction of machines were mandatory. In Sheffield the manufacturers, proud of their craftsmanship, resisted change, clung to a slow and costly meticulousness, and had already lost out in the world's markets. Yankee ingenuity had evolved a cheaper process for table-knives and forks. In Germany that attention to technological improvement which pervaded industry resulted in cheaper pocketknives. The problem for Camillus was how to preserve quality standards in

adapting a new technology to a complex handicraft. One of the first steps taken was to bring from Germany a number of expert grinders to supplement the English cutlers.

Oddly enough, Sheffield's own rise to glory was traceable to a migration of workers. The cutlery trade was already established there in the fourteenth century, as in other parts of Yorkshire, under the guild system, although the London guild was older and more formidable. In the beginning there were whittles, consisting of a blade of bar steel held in a handle of wood or cow's horn; and then came an elementary form of folding knife, where the blade shut into a groove. But neither the London, the Sheffield, nor any other English knife was as good as the best that the Continent produced. The turn came in Queen Elizabeth's reign. Devoted to mercantilism and the religious reformation, Elizabeth's national policy welcomed refugees from persecution, principally from Flanders, the Netherlands, and France, and those who were cutlers among them were consigned by the authorities to Sheffield.

There the cutlery industry expanded under the double influence of government regulation of manufactures (standards having deteriorated with the breakdown of the guilds) and the ingenuity of the refugees. These immigrants in the latter half of the sixteenth century introduced knives in which the blades closed with a catchpin working in a segment of a circle, and multiple blades appeared along with a greater variety of handles and or-

namentation. Londoners resented the invasion of their market by provincial goods and took measures against "English foreigners" caught hawking in the streets. But Sheffield's reputation had now spread abroad. In time nearly all English cutlery production became concentrated in that city.

On the River Don, in a setting of hills and brooks, Sheffield had abundant waterpower to turn its wheels as well as easy access to sandstone and iron. Amid this rural scenery wheels were erected in workers' gardens—an idyllic picture which obtained only in season, for Nature would go on strike with winter freeze and summer drought. Even after steam was used to turn the stones and buffs Sheffield adhered to the practice of outworkers for forging and grinding. There were no factories in the modern sense of all-inclusive units. English slowness to use machinery rested snugly in the deep conviction: "We have seen no goods produced by it that will bear comparison with those made by hand."

Both the cunning and the shortcomings of handwork were apparent in the various intricate stages of the art as then practiced. The high aim was to produce a perfect fit with enduring materials. The first stage was handforging the blade, a process older than medieval times. In the hearth-fire the end of a steel rod glowed to red heat and then the smith made the anvil ring as he struck a crude shape. This bit of steel he next severed from the rod and reheated so he could hammer out a short projecting shank,



or tang. At a third heat he struck the nailmark and beat the whole rough form to correct it as best he could.

If he was preparing a penknife—an instrument to cut quills with precision—the objective was a very hard blade with a very keen edge. But a blade intended for heavy usage must not be too brittle. Hence the importance of tempering after hardening. Hardening was accomplished by quenching the blazing-red part in water or oil; tempering for elasticity was done by reheating slowly, the color changing as the temperature rose, the surface of the metal gradually passing from dull gray to yellow, straw, brown, purple, dark blue and light blue. This was called “drawing the temper.” It rested with the judgment of the smith when to check the process; in the case of knife blades he stopped at some tint of blue which satisfied him.

After heat treatment came rough grinding for the sides of the blades. A large natural sandstone wheel was used for this purpose (dry in the early days) and the silica dust flew into the grinder’s lungs. Wet grinding was later adopted; the blade might be dipped frequently in a vessel beside the worker or the wheel might be in contact with water under the wheel. Dry or wet, the tiny particles thrown off were dangerous to health, and the occupational disease of silicosis or “grinder’s consumption” became prevalent and lethal.

Lack of uniformity in the texture of the stones necessarily resulted in non-uniform production. But this was

no particular hardship, considering that each part was individually made and individually fitted.

The backs of the blades were ground next. After straightening came glazing, or the first smoothing, and buffing or polishing on other wheels. Also the tangs had to be ground and hand-filed, and the tang sides buffed to assure ready opening after the knife was assembled. The size and speed of the stones varied according to the nature of the work; for polishing a large wooden wheel was used with a head of beeswax, tallow, and emery.

Springs had been introduced into knife-making at some unknown date before 1600, and the unsung genius who invented them gave the trade its greatest impetus. Originally handforged, like the blades, they were later blanked on fly-presses and ground, then filed to accommodate the tangs. Blade and spring would be clamped in a vise and bored in the proper places by the cutler in building-up the knife.

The scales, or linings, forming the chamber which housed the blade, were forged or filed. Price determined whether iron (which rusted) was to be used for the scales, or brass (which prevented rust), or nickel silver. To the scales was fastened the covering material, appropriately shaped; to them also bolsters were welded and riveted. The parts, bored separately, were pinned together and the whole was smoothed over and buffed. Finally the blades were opened and sharpened on an oil stone.

The early cutler combined the functions of the forger

and the grinder in his person, besides shaping and preparing the covers, or hafts. When he became a specialist his operations were still manifold. An idea of the cutler's task in the hand-construction of a single-blade pocket-knife may be gleaned from the following itemization of forty-two processes. The list may make tedious reading, but consider the doing!

*Scales:* clipping fashes around bolster, boring rivet-holes in scales to plate measure, boring small holes for pinning covering on metal scales, setting and raping projections, pairing scales, matching scales to plates, pinning on covering, riveting, filing rivets inside scales, sawing projecting ends off covering, putting in points, dressing and taking down covering on sides level with scales, glazing bolster edges, knocking out points, inserting shield.

*Springs:* smithing springs, smoothing spring backs with file, marking springs and scales to match, boring springs, removing fash of boring, cropping springs to exact length, filing spring ends, giving them bend, bunching springs for hardening, hardening and tempering springs, setting or true-ing springs, glazing inside of springs, burnishing inside of springs.

*Hafts:* setting and wiring springs and scales together, hammering rivets, rindering bolsters (countersinking hole for rivet head).

*Blades:* marking blade for boring, boring blades, removing fash from blades, filing tang, glazing and burnishing back of blade by bolster, glazing tang ends.

*Knife*: setting blades into hafts, riveting blades in, opening blades and setting them back into line with haft, filing heads of hafts, filing backs, drilling blades; making them "walk and talk" properly, i.e., fall in exact center between scales, click properly, and work easily.\*

As if this were not enough to wear one down, the knife-maker had to produce a multiplicity of patterns in conformity with the pleasure of his customers; and each pattern in turn came with variations in handles. Pearl and ivory hafts were the most expensive. The best ivory was obtained from the milk teeth of the Angola elephant. Bavarian stag horns were also highly desirable, and the leg bones of stags, giraffes, and oxen were likewise cut up. For hafting cheaper goods cattle horns were slit, immersed in hot water for softening, pressed into a mould, and trimmed by hand. As the cost of materials advanced, wood and composition were introduced, likewise pressed in imitation of stag.

Thus the Sheffield method of manufacture proceeded with scarcely any change from generation to generation, except that the cutler was relieved of the preliminary work of the forger and grinder and became preeminently a specialist. Reports arrived from America of a system of uniform, interchangeable parts struck for table cutlery—the rapid cutting of solid steel by a single blow from a die. Sheffield grudgingly acknowledged some merit to this system but could not see its adaptability to pocket-

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\* "Cutlery Trades," G. I. H. Lloyd, Longmans Green.

knives, except in the case of springs, and only to a limited extent at that.

Wrapped in the comfort of a good name, respected in the world's markets, Sheffield let German competition in cheaper articles grow and it ignored the strides made in Solingen after 1850. In fact, English houses woke up only in resentment at a common practice of German manufacturers of misrepresenting their inferior goods as being of English make.

Curiously, Solingen had produced knives of high quality in the sixteenth century at a time when Sheffield artisans were still turning out simple whittles. This German city bore a close resemblance to Sheffield—each set in a picturesque district of hills and streams, with abundant water supply and sandstone and accessibility to coal and iron. Like Sheffield, Solingen was a natural cutlery center. However, the breakdown of the German guilds and the consequent relaxation of restraints resulted in decay. Authority was lost, skill dissipated, and standards depressed with the slackening of efficiency. But the application of steam and machinery brought a rebound.

Mechanical forging and steam wheels became extensively used in the German city, cutting costs and speeding production. The sparks of industrialism flew. Even though outworkers continued to operate their own grinding shops beside their homes, their work was rigidly regulated. German technical proficiency bore fruit. While British exports to the United States declined stead-

ily, Germany's exports to the United States—despite the tariff—rose even more steadily. By 1902 the total for all kinds of cutlery from Sheffield was \$75,000, from Solingen \$1,257,000.

American knives were made in small quantity. We had about thirty plants, most of them in the Middle Atlantic states, half of them employing less than twenty workers. They had been manned originally by craftsmen from Sheffield and were still adhering to Sheffield ways with some admixture of American ingenuity. The succession of tariff acts had barred all but a trifling amount of the highest-grade goods and completely shut off cutlery in the medium-price brackets. Here was the opportunity which lay open to Adolph Kastor.

## IV

### *Progress at Camillus*

THE HIGH labor standards prevailing in the United States have been a constant incentive to manufacturers to improve production methods. This improvement has, by means of lowered costs, facilitated the wide distribution of goods. With such a combination of efficient industrial organization and a thriving citizenry came the flowering of America. The cultivators were many.

When the Kastors took over at Camillus they proceeded in harmony with the economic and social principles which made our country grow. They believed in intelligent progress. Having outlets for knives, thanks to experience and a good name in the trade, what they needed was production. So steam-driven drop-forge hammers and fly presses invaded the hallowed realm of hand forging. Blades, springs, and scales were blanked out, not only with speed but also with uniformity. Good wages attracted expert grinders from Germany. The "machine age" did not swallow the worker; on the contrary, it increased his value by increasing the worth of his output.

When grinding wheel manufacturers began experimenting with substitutes for oldstyle stones they encountered prejudice against change, resistance to the higher cost, and doubts as to efficiency; but the Kastors were eager. The new alumina wheels, headed with glue and

abrasive, did an accurate job and ended the menace of grinder's consumption. Dust and other particles were carried off by air suction close to the point of operation. Other sanitary measures were instituted and accident-prevention steps adopted. An enlightened labor outlook created the equilibrium of factory life which was fundamental to all-around development.

So fast did the plant at Camillus expand that by 1910, in place of the single original shop, stood a cluster of a half-dozen white buildings flanked by tall black puffing sentinels. Two hundred persons were now on the payroll, and the firm was behind on its orders. Production that year was 75,248 dozen knives.

The main impediment was a housing problem. Camillus Cutlery Company had grown too big for Camillus. It absorbed as many as were available from a population of less than one thousand, and no one dreamed of employing female labor except for a few women to do light inspection work. In those days there were no commutation facilities for transporting outside workers although Syracuse was little more than eight miles away. Said Moritz Mayer, the plant manager: "I could take on a hundred more men this spring if there were more places in Camillus for them to live." Builders could not easily be persuaded to construct new houses in a one-factory village. As a partial solution the company put up a dormitory for bachelors on its own grounds.

The American pocketknife industry was growing rap-



idly. Despite a million dollars' worth of imports which hurdled the tariff wall, domestic production tripled this figure. A further advance in duties, under the Payne-Adrich law, had its intended effect. Ramsay Macdonald, a Labor member of Parliament, on a tour of German industrial centers in 1910 learned in Solingen that the cutlery export trade had fallen off forty percent since the passage of that act. This meant for Adolph Kastor & Brothers, who were still in the import business, that only the cheapest grades of knives could be obtained from overseas.

Meanwhile new areas of the country were opened up to Camillus knives by favorable connections and aggressive promotion. "Sword Brand" had been adopted in 1906—two crossed swords in the trademark representing the finest steel, balance, and performance. In that year the founder's son, Alfred B. Kastor, came into the business straight from Harvard College and continued his studies—in every phase of the firm's affairs, with a quick-grasping mind, mastery of detail, and ability to see the relationship of the parts to the whole. There was no sub-basement, so he had to start on the ground floor. His father did not let him go on the road until 1910, and not before giving him written advice on salesmanship. Here is an excerpt from the letter, which is preserved in the company archives:

*The first thing necessary is PATIENCE! . . . The main thing in a salesman is the ability to be a good listener; pay attention to all the buyer may have*

*to say and then, when he is through, blow your own horn about your own goods. To infuse confidence in a man a salesman has got to impress the buyer with the fact that he knows what he is talking about . . . but don't volunteer all this information at once —always reserve something to be used to combat an argument from the other side. . . . So much for the first lesson.*

Alfred B. Kastor brought the energy and imagination of a new generation and soon revealed his administrative talent. In 1912 his father honored him with a partnership. The following year Robert N. Kastor, the younger son, was taken into the business to perfect himself in the sales department and help raise the company to new heights on the foundation so carefully laid.

By 1914 American pocketknife production totaled in value more than \$4,000,000. The output at Camillus was 98,281 dozen, and analysis disclosed that improved technique had increased the per capita yield of the employees. With a complete stoppage of imports from Germany following the outbreak of World War I, domestic manufacturing became greatly intensified. The Kastor finances were in excellent condition to meet, first, the economic shock of war and, second, the new opportunities of the home market.

More workers were hired. The average wage went up. The quantity produced at Camillus climbed through the

war years. And Camillus Cutlery obtained its first experience in government work. The initial war order came from the Canadian Government in 1914—marlin spike knives for the use of the British and Canadian navies. A total of 18,062 dozen of these was ultimately produced. Beginning in 1917 Red Cross knives were made (8,500 dozen in all) and in 1918 United States Navy knives were being loaded at the Camillus railroad station. (The company turned out 12,917 dozen for the Navy.) At the same time our Government ordered 50,000 surgical scalpels. Included in the picture of the times were 4,108 dozen army knives produced for the Dutch Government immediately after the war and shipped to the East Indies.

Government orders represented only about ten percent of the Camillus production during the war years. Civilian needs kept mounting—to 116,285 dozen in 1917—and the figures would have been greater but for the first call of the armed forces on manpower. Much of the skilled personnel was now in uniform and replacements were hard to get. Alfred and Robert Kastor both went into the Army. The executive staff was whittled down. Alfred went to France as a sergeant in Company F of the 308th Infantry, 77th Division, and had narrow escapes in the Oise-Aisne and Meuse-Argonne offensives, exposed to German artillery fire. His brother was commissioned a captain of infantry and became a bayonet instructor at Camp Gordon, Georgia.

Before going overseas Alfred Kastor sought an under-

study for the manager, Mr. Mayer. With the foresight characteristic of his father he wanted someone who would be able to cope with the engineering requirements of post-war manufacturing. He found his man, William D. Wallace, a mechanical engineer graduated from Norwich University and at the time working for the Consolidated Edison Company in Astoria, Long Island. Mr. Kastor was impressed with his scientific training, personality, and approach, and in November, 1917, Mr. Wallace began his long, fruitful service to the company.

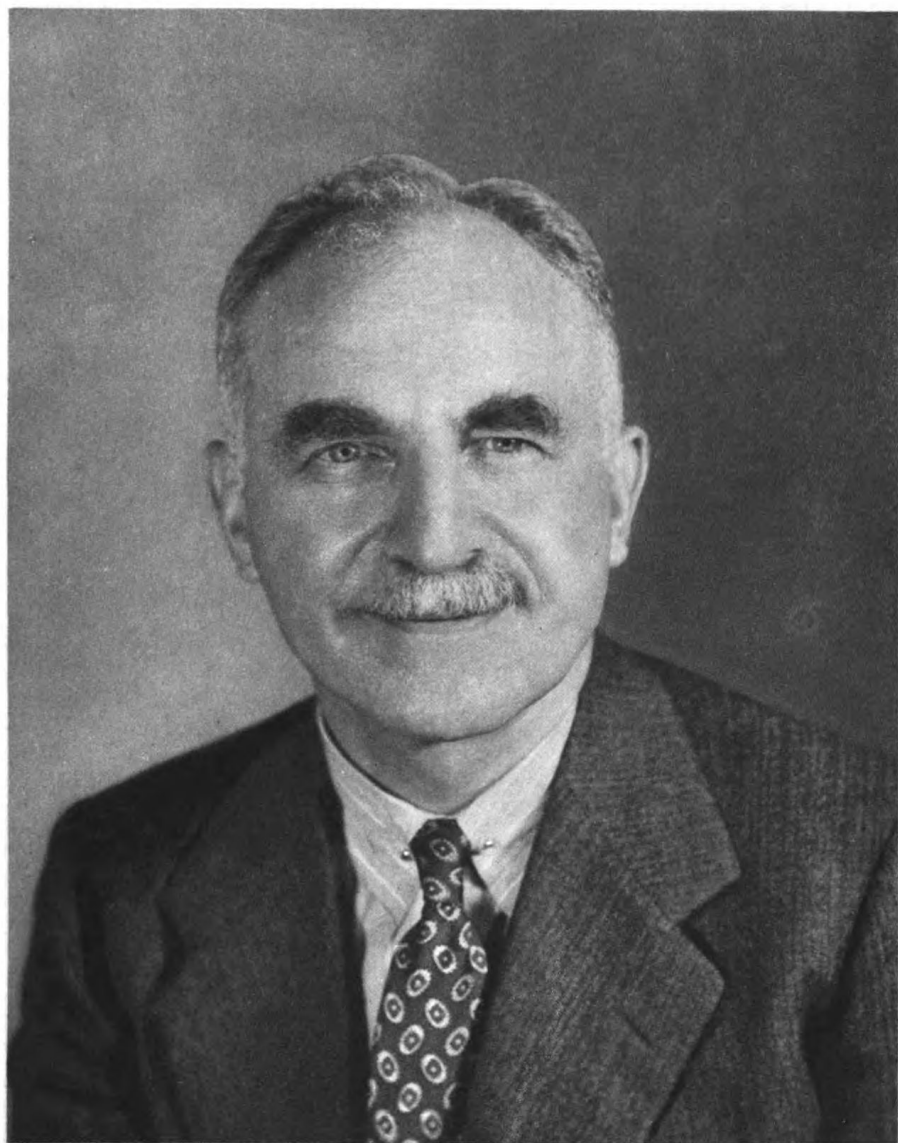
Except for brass there was no scarcity of materials during the war. High-grade steel for the blades and silver for the bolsters were available, though the cost of raw materials in general advanced. Only one government restriction was placed on knife manufacture: polishing was prohibited as a measure of conserving manpower. As in wartime Adolph Kastor insisted on maintaining every feature of Camillus products which had won them fame in the trade, so when peace came he refused to compromise on the attractive appearance of the goods and ordered the company's remaining stock of unpolished knives taken out of the line and disposed of.

In 1918 Robert Kastor went to Germany to reestablish import connections for the parent concern; to obtain merchandise of the type which was uneconomical to produce here. (Shortly thereafter he became a partner.) He found Solingen geared to recapture its lost trade, and indeed cheap German cutlery once more spread over the Amer-

ican market. And Congress went back to normalcy with a vengeance, which in the case of the Fordney-McCumber Act meant oldfashioned protectionism, against debtor nations. It may be noted, in passing, that the Kastor enterprises never concerned themselves with pressure politics, being nimble enough to adjust their operations to anybody's tariff tinkering.

The Germans were making up for lost time. Bent on large orders of individual items, impatient with intrusive special orders, they rationalized their technique. Machines were set to fly three to four hundred and fifty blade-blanks an hour out of sheet steel, under a hammer, and taper them perfectly to a thin edge, smooth and free from "scale"—the blanks so well prepared that labor was saved in the finishing stages. Grinding was still done by hand on sandstones, but there was talk of an automatic grinding machine on the way. Hardening was given special care over a steady coke fire; tempering in large revolving boxes, but the temper color was still judged by eye as the box was opened at intervals. Hand boring of blades, scales, and springs was virtually eliminated; they simply punched holes through. New methods were employed for cutting up handle material. Each step saved time.

A persisting vestige of pre-war days was the Solingen practice of having separate manufacturers produce parts and bringing these together in an assembly plant. One firm contracted to make the blades for a particular pattern, another the springs, another the linings, and so on.



ALFRED B. KASTOR  
*President of Camillus Cutlery Company*



WILLIAM D. WALLACE  
*Vice President of Camillus Cutlery Company*

The manufacturers' custom of hiring outworkers also continued; a man could manage his shop in his own garden and run his lathe by hydroelectric power, in which Solingen abounded.

The year 1920 found Camillus Cutlery turning out more goods than ever. With three hundred employees the payroll was the largest in the firm's history and the average wage fifty percent higher than it had been at the beginning of the war. A factory census taken in 1924 revealed a gratifying record of continuous service—fifteen people had been working there for twenty years or more, fifteen others for fifteen years or more, twenty-seven for ten years or more, fifty-eight for five years or more. The working force was a cross-section of America—folk of not only English and German extraction but also Russian, Polish, Italian, Hungarian, Scandinavian, and other racial stocks.

Camillus had been making, besides the general run of pocketknives, a variety which included electricians', physicians', pruning and nursery, and skeleton knives, as well as pocket tool-kits. The number of patterns of pocketknives had grown apace with customers' demands for individual styles—a decidedly uneconomical condition which had begun to fasten itself on the industry back in the misty days of old Sheffield. This historical barnacle was out of place in the modern world, and ultimately a remedy would have to be found.

First, a decision was made to concentrate on pocket-



knives—to become foremost in one thing. The lesson of the pitfalls of conglomeration, learned by Adolph Kastor in the '70s, was well-remembered now. (All his business principles remained deeply imbedded upon his retirement.) Next, a pioneering step was taken. In 1927, the company, now under the direct supervision of Alfred B. Kastor, introduced mass production into the American cutlery industry.

Of course, the principle was not new. It had long since become a characteristic of American industrial achievement. Standardization of parts had made a gigantic success of American harvesting machines, shoe machinery, bicycles, locomotives, and automobiles. The economies which Henry Ford brought to the making of popular-priced cars Camillus likewise sought, despite fatalistic lamentations of Jeremiahs that the idea could never be applied to such an intricate instrument as a pocketknife. The tradition of the delicately hand-wrought knife died hard. But it was definitely put to rest by the pressure of the times and by fresh thinking.

The pressure came from the competition of other articles of trade, particularly items intended as gifts. A pocketknife had to be a more appealing buy. Once the *desideratum* was established, the engineering skill of Mr. Wallace went into action. Appointed factory manager on the death of Mr. Mayer in 1922, he systematized each stage in the manufacturing process and with a searching mind for improvement attained a high degree of effi-

ciency. There was always one self-imposed condition: efficiency had to be compatible with quality.

Underlying mass production was another principle—simplification. Elementary economics dictated that operating costs must not bear an unreasonable ratio to sales volume. Ranking high in costs was the expense of tooling—it was generally estimated in the industry that the cost of equipping a factory to produce one dozen knives per day per employee was \$500, or for 300 dozen a day an investment of \$150,000. Speeding him up to get a bigger return was out of the question; the way to obtain increased output was by simplifying the line to fewer patterns and sizes and producing these in quantity. Where a line was so standardized, accurate tool methods reduced the unit cost in conjunction with mass production.

Before these truths of industrial management were divined, or an attempt made to apply them, each manufacturer was saddled with a mounting variety of numbers, some having no more than one-sixteenth of an inch difference. Variations existed in blade patterns and finishes, in types of handles and bolster caps, in lining and cap metals, in lining finishes, in types of shields. Some factories produced knives in more than fifty sizes, and there were seventy-five to a hundred variations possible in each size. Lines had expanded in consequence of catering to special demands. But whims are always expensive.

To the manufacturer this sort of spawning meant heavy investment, heavy inventory, capital tied up, more expen-

sive production. It certainly stood in the way of mass production. The disadvantages to the distributor, though he might like a variety of display to stimulate the boy gazing in the store window, or the eternal boy within the man, were: slow turnover, large stock, slow delivery, increased sales effort. Some manufacturers' lines contained 1,200 numbers. Over in Sheffield there was a house which had 4,000 numbers.

The thought of curbing excessive variety first won national standing during the war as a conservation move but did not reach the pocketknife industry at that time. After the war the Department of Commerce set up a Division of Simplified Practice in the Bureau of Standards and helped this industry adopt a simplification program. It was decided to issue a catalog of one hundred and forty basic dies from which each manufacturer would select one hundred and seven as his limit, plus any five others he might wish to add in meeting the popularity of other types or in meeting import competition. In any case, the total offered by any maker was not to exceed five hundred numbers.

The haft—its shape and size, which were governed by the basic die—constituted the basis of simplification. The numbers were the variations in style of blade, size of blade, number of blades, handle material and colors, notching, etc. As evidence of the almost endless possibilities, the program called for a limit of two hundred on the number of celluloid-handled knives in any line and a limit of sev-

enty-five on pearl. Despite the desirability of simplification, one house advertised to the trade soon after the program was adopted: "We manufacture over 800 different patterns of pocketknives."

Camillus, before embarking on mass production, had as many as fifteen hundred active dies. But this didn't make sense. Lopped off or sloughed off, they were discontinued to such an extent, and with the acquiescence of the distributors, that in time the company was confining itself to thirty-two dies. More remarkable, all but a small fraction of the business was done in knives made from only twelve patterns.

So Camillus marched on. Sales and production reached new peaks, as did the payroll. The annual per capita yield in the factory came to 579 dozen in 1930, compared with 376 in 1910, an increase of fifty-four percent. The gain was widely shared. It spread from plant to public and swung back to the prosperity of the community. From its social aspects of a contribution to American life, here was a triumph of small business.

## *Man and Machine*

AS THE TRAIT of loyalty is evidenced only in a pinch, so the proof of strength comes in the emergency. But it is not enough for a corporation to be built to withstand shock. Camillus Cutlery did more than weather the depression: it acted in the awareness of its social role. The crisis found the company made of the stuff and standards of professional men.

Justice Brandeis said it: "Business is a profession."

The Village of Camillus was virtually dependent upon the factory. The last remaining lumber mill, an apiary, a father-and-son business making an organ mechanism—they could not affect the employment situation one way or another. Aside from the cutlery there was no industry to sustain the community's economic life. All over the country the plague of depression brought shutdowns—a dismal hush and silent figures in the streets. In the pocketknife industry, as elsewhere, the whirl of machinery died down and a number of firms gave up the ghost. The total output, normally running above the \$5,000,000 mark annually, declined to \$2,153,803 in 1933, actually a drop of fifty-nine percent in four years.

And the slump would have gone lower but for the attitude of Camillus Cutlery's owners that a business was more than a profit-seeking enterprise. To them it was an

institution with responsibility toward its workers. The task which management set for itself was in no wise philanthropic but essentially practical—how to continue operations through bad times. This involved re-examination of both the market and the plant. Merchandising and engineering had to play the part of physicians.

In the first place, there was no question of overproduction and having to work off goods on hand before resuming manufacture. The company had pursued a policy of producing on order, hence was not heavily burdened with inventory. This policy would be maintained. Attention had to be directed toward putting life into flagging demand attendant upon reduced purchasing power, and here the dominant consideration was value. The product must possess price-appeal in a competitive bid with other types of merchandise for the consumer's dollar—or quarter. A smaller margin of profit was determined, but merely as half the cure, which could be fully realized only if the factory ran at capacity with even greater efficiency than the degree already attained. It was imperative to create new processes of manufacture and overcome any wastes which sapped the vitality of economy.

Sweet are the uses of technology. After adopting the preliminary expedient of sharing the available work—which meant working four days a week for the time being—the factory evolved methods of mass production on an intensified scale, with the result that the sales department was able to “deliver the goods.” Multi-step dies, fast-act-

ing presses, automatic feeds, automatic polishers, and other devices did the trick. One measure of success was that Camillus occupied by 1935 the position of producing thirty percent of the industry's total. Another index lay in employment figures; they not only returned to normal but at times reached six hundred and sixty, a record high.

In consequence there was little need in the village during the depression for the help of relief agencies and hardly any use of Works Progress Administration projects. In fact, the benevolent hand of paternalism of any kind rarely touched Camillus, whereas a feudalistic condition might easily have arisen in such circumstances, with factory as manor-house and Nine Mile Creek symbolizing the moat. Always the company forbore to enter the lives of its people—except to strive for steady employment, to give them the highest rates of wages in the industry, and to safeguard them from accident and illness.

Once Mr. Wallace accepted an invitation to serve as president of the village; its administration was bogged down by fiscal problems. After setting them to rights he relinquished the office. And only briefly did the company venture into public works, which came about through a housing shortage. No one else stood ready to fill the need, and as its own workers from outside Camillus required accommodations, the company embarked on a building program. It sold forty houses at cost, accepting small down payments and small monthly sums, charging the usual rate of interest on the unpaid balance. But even this act

the firm later came to regard as an intrusion, and when Federal aid was extended to home-builders the plan was discontinued as being unnecessary.

A cheering memento of those trying times is a hand-written document drawn up by the board of the Town of Camillus and signed by the supervisor, the town clerk, and the four justices of the peace, all of whom assembled to thank Mr. Kastor for providing work—"It has kept many from want, it has preserved their self-respect, its benefits are indirectly shared by many others. We feel we are fortunate in having our major industry in such courageous and resourceful hands."

The employees themselves, gathered at one of the periodic general meetings the day before New Year's 1932, sent Mr. Kastor a telegram of holiday greetings and—"appreciation for your wonderful cooperation in time of need. We shall do our best to deserve such consideration."

But it is not necessary to browse in a company's files for signs of the quality of its labor-management relationship. This may be found in the daily life of the plant, in each of the five buildings, where the workers enjoy freedom from rigid discipline; where they know they cannot be fired by their foremen, and any requested adjustment in rates or working conditions is settled satisfactorily in the course of the day without loss of time. Thus not an hour has been lost in the past twenty years.

The employees are encouraged to report any irregularity. Each one has immediate access to the manager's office.



There is no buffer in the form of a personnel executive. So important are human relations that management regards them as the keystone of production. Such a philosophy is bound to act as a leavening spirit and generate confidence, enthusiasm, and a creative force.

The manager endeavors to know each worker personally—and this intimate contact is possible in a small business. He avoids any penetration of privacy—again the unfeudalistic touch—but many a worker has come to him with problems and for advice and help. Fathers and sons work here, and, in the course of events, grandsons—generations of Camillus. They are the nucleus of the working body.

On the other hand, the manager strives to give the personnel a conception of the business beyond the factory walls. Display boards exhibit the finished products so they may know the merchandise they helped to fashion and see what contribution their particular operation has made to its craftsmanship and perfection. Plant meetings serve excellently to convey news and ideas. The employees are told the wholesale and retail prices of the goods and apprised of customers' wants and competitive conditions. No room is left for ignorance or for misunderstanding, which is based on ignorance.

The foremen in charge of separate units have all come up from the ranks, from bench or lathe. Weekly meetings of the foremen constitute round-robins of enlightenment and also provide an opportunity for renewing

emphasis on safety. They have a safety committee which meets monthly and which makes regular inspection trips throughout the plant, seeing that cup-goggles are worn at lathes, women workers have hairnets, and other rules for accident prevention are observed. All automatic hammers are equipped with trips and other safety devices. The company enjoys the lowest accident rate in the metal-working industries. The workers established a safety record which won the New York State Safety Award five times in the last ten years, the one hundred percent award twice, and honorable mention once.

The buildings are sanitary and well-lighted. The ventilating system and removal of dust costs the company \$20,000 a year to operate and is worth every cent of the money in health and comfort, besides which the company pays no insurance premium for industrial disease risk. There are rest rooms, a first-aid room, and a large recreation hall and commissary. Vitamins are furnished daily, gratis. A week's vacation with pay is given to anyone in the firm's employ for a year; two weeks with pay to older employees. No one is laid off because of age; something is found for him to do. Seasonal employment, once the bane of the industry, has been largely eliminated by wise planning, the development of a varied line, concentration on different grades according to the state of the country's prosperity. All these minutiae of factory life are a pleasure to record when one reflects on the old terrors of industrialism. Here the workers on their own trust take

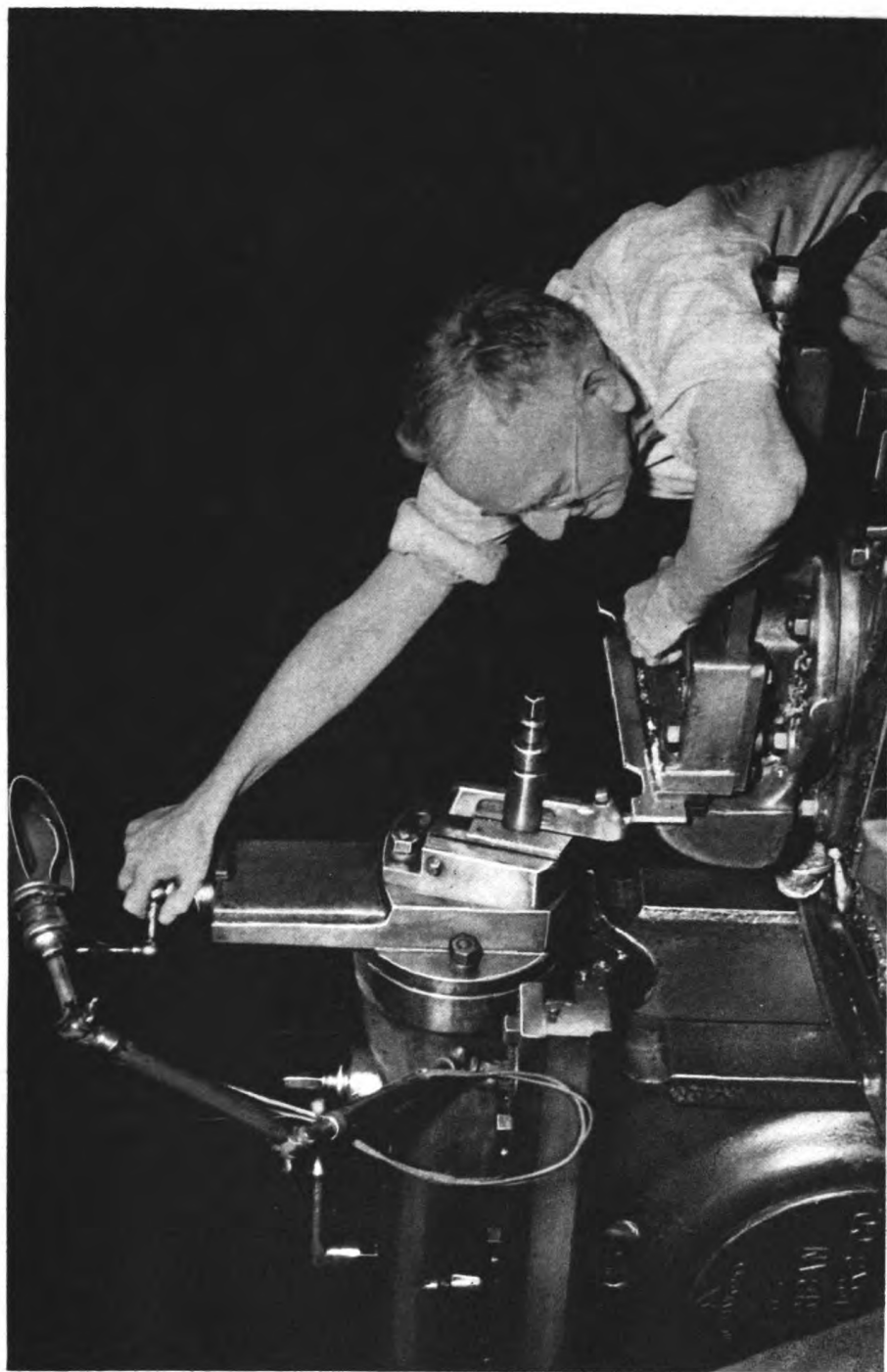
time out for a smoke or a bite; power is not shut off while a limited time is set for eating. This absence of regimentation, this recognition of the good sense and dignity of man, has justified itself in terms of happiness and achievement.

Because management respects the employees' intelligence, labor understands that the introduction of new equipment and methods has improved its working conditions and enabled the company to get more business and give more pay. The free inquiring mind has been fostered, and machines have been devised or perfected as workers studied their own operations for a better way to perform them. In almost every department there are novel machines entirely designed by Camillus men and constructed in the company's toolroom, where all its dies are built. A die press which is fed long strips of steel and which blanks the blade, cuts the nailmark, and punches the rivet hole in one blow; an invention for attaching shields securely without riveting; an assembly line which matches several parts with a twist of the wrist—these are some of the unique techniques.

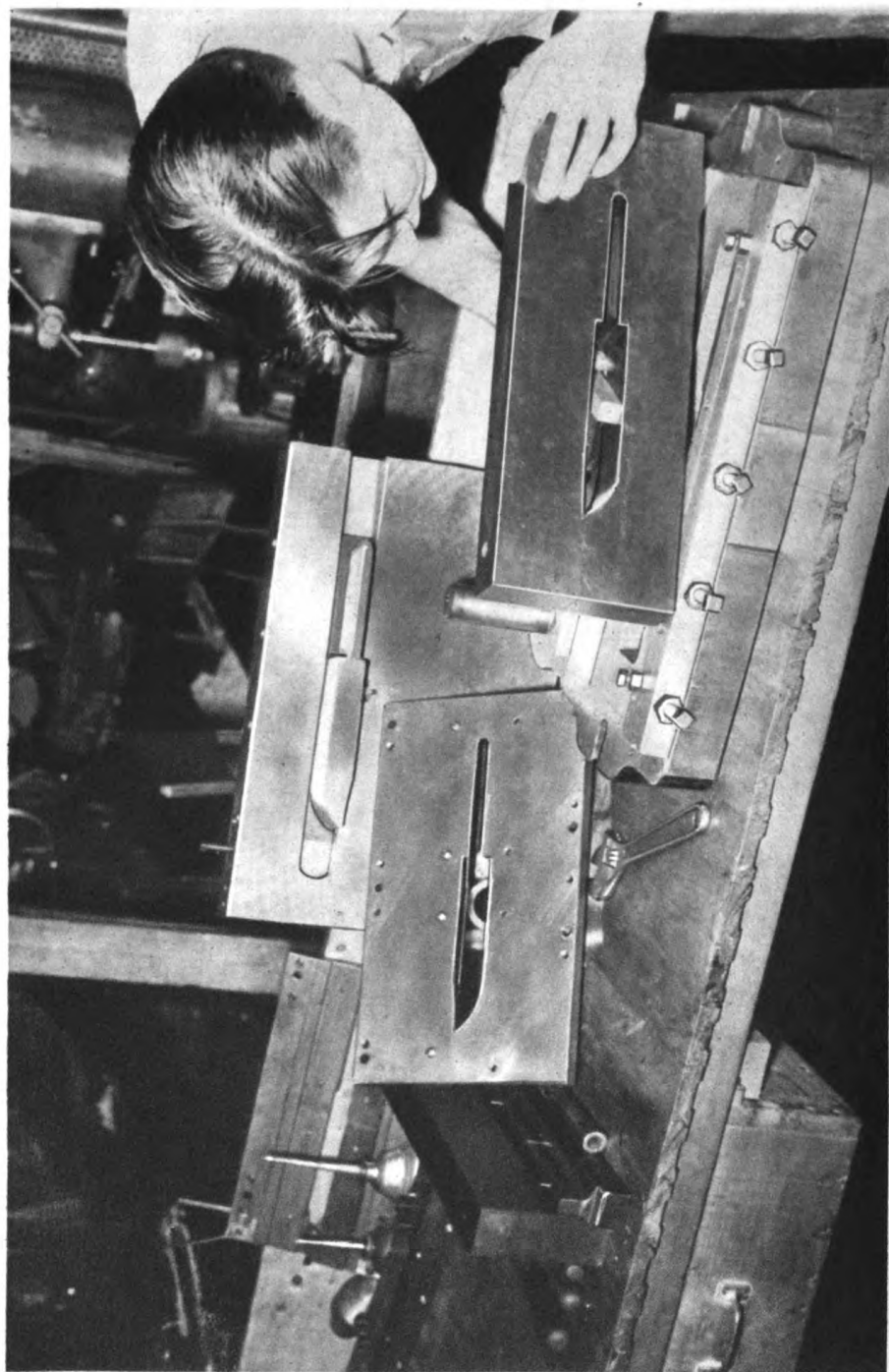
The most modern devices are used for insuring uniform accuracy and absolute precision. One example is the heat-treating process, where hardening furnaces maintain a constant temperature under pyrometer controls and hardness is tested on a Rockwell "C" scale by taking impressions at points along the length of each blade sampled.\*

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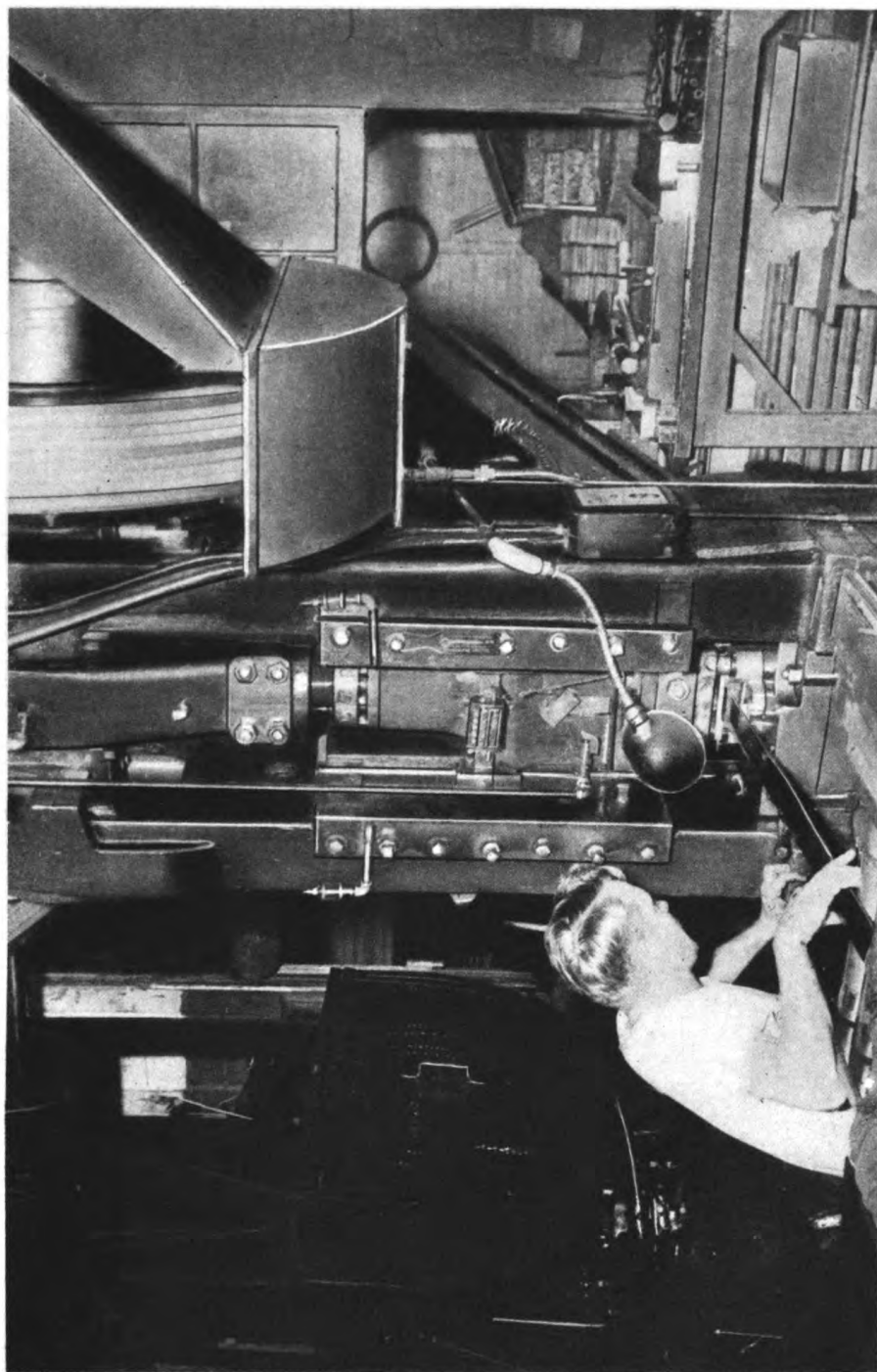
\* As an economy measure most of the heat-treating, which entails consumption of a vast amount of electricity, is done at night to avoid paying peak-load rates.



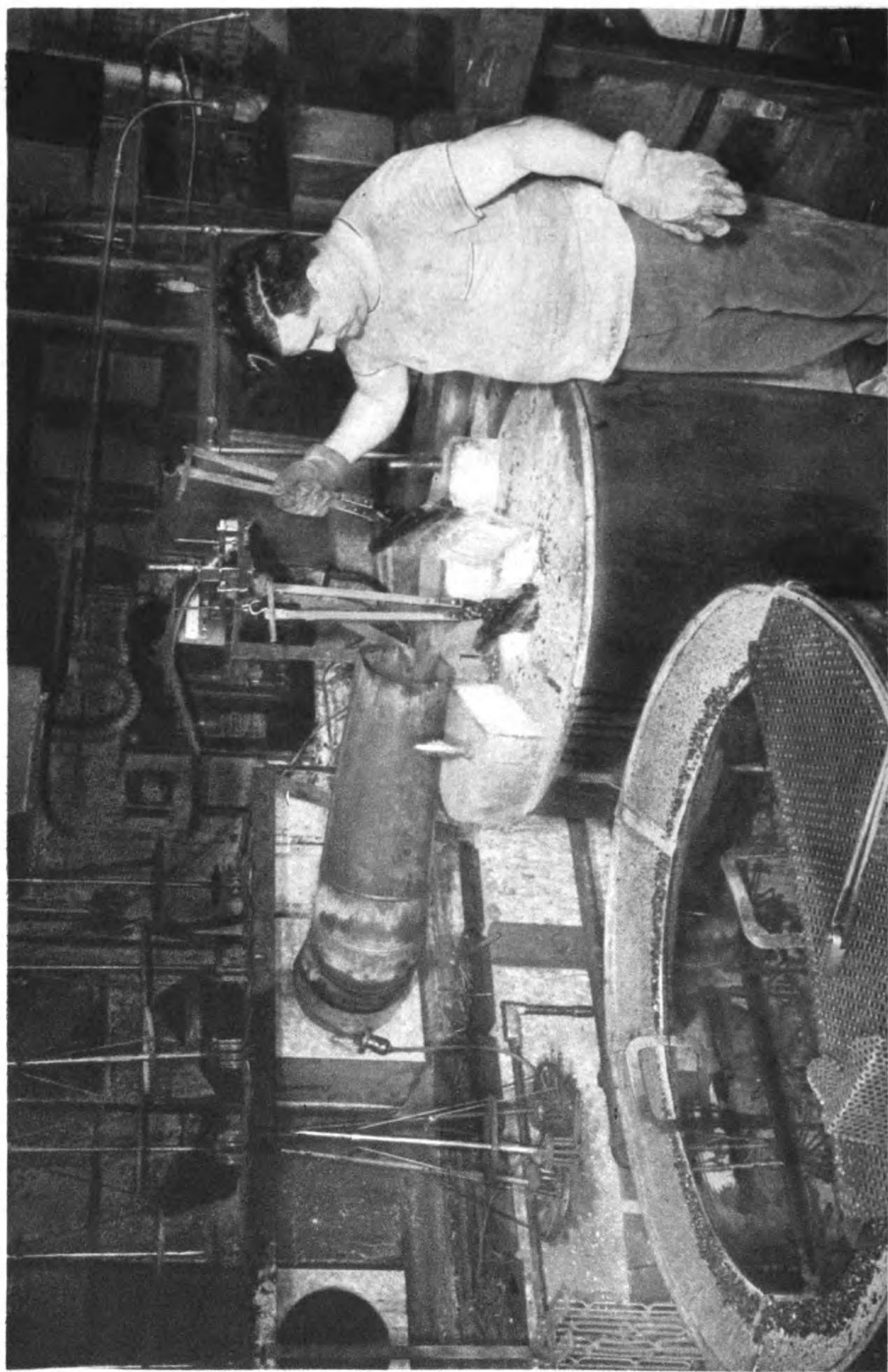
CAMILLUS MAKES ITS OWN TOOLS  
*Shaping a Tool*



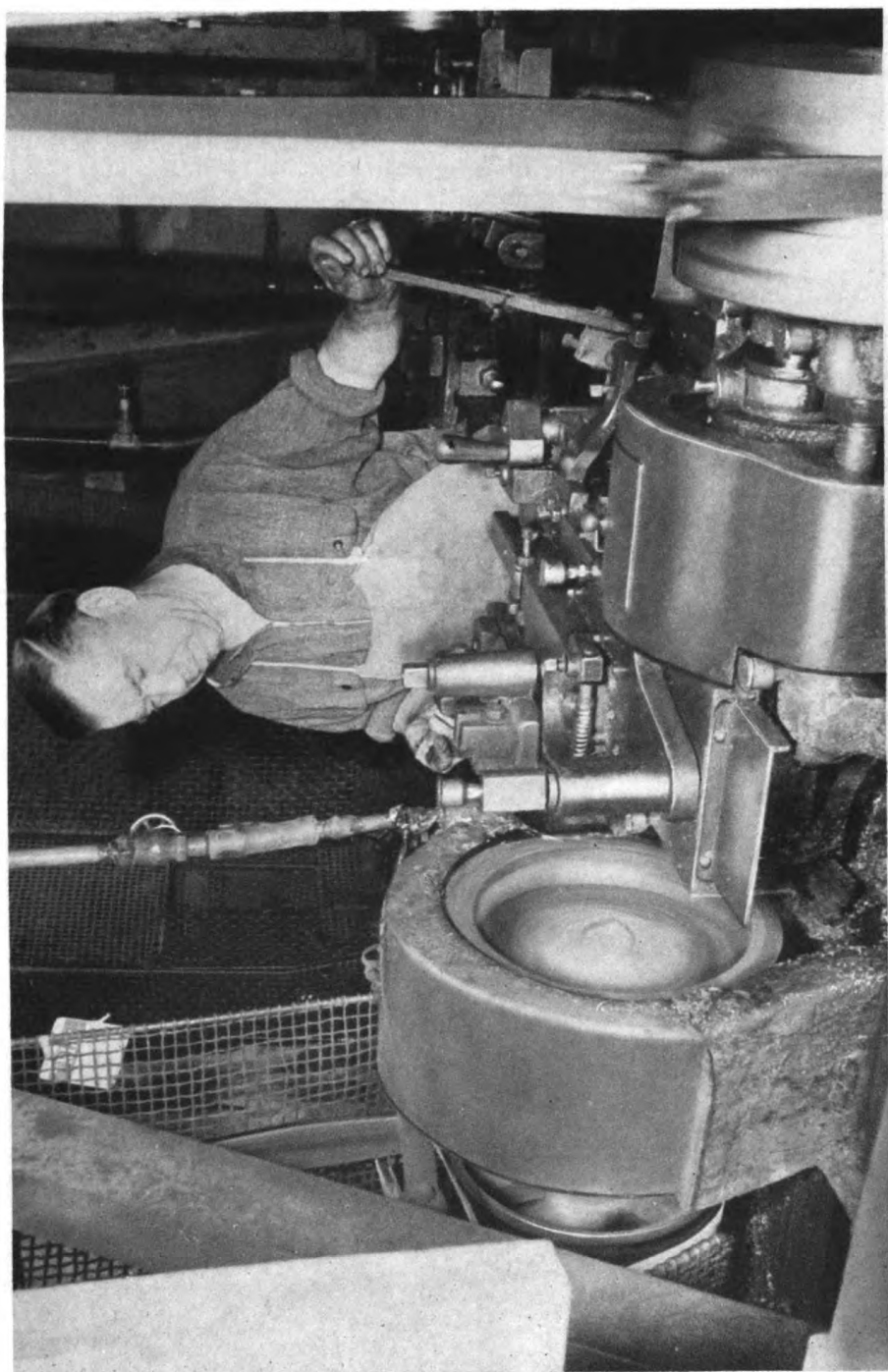
**BUILDING A DIE**  
*Hunting-Knife Die Is Stoned for Smoothness*



FEEDING A MULTI-STEP PRESS  
*Blanking Pocketknife Blades*

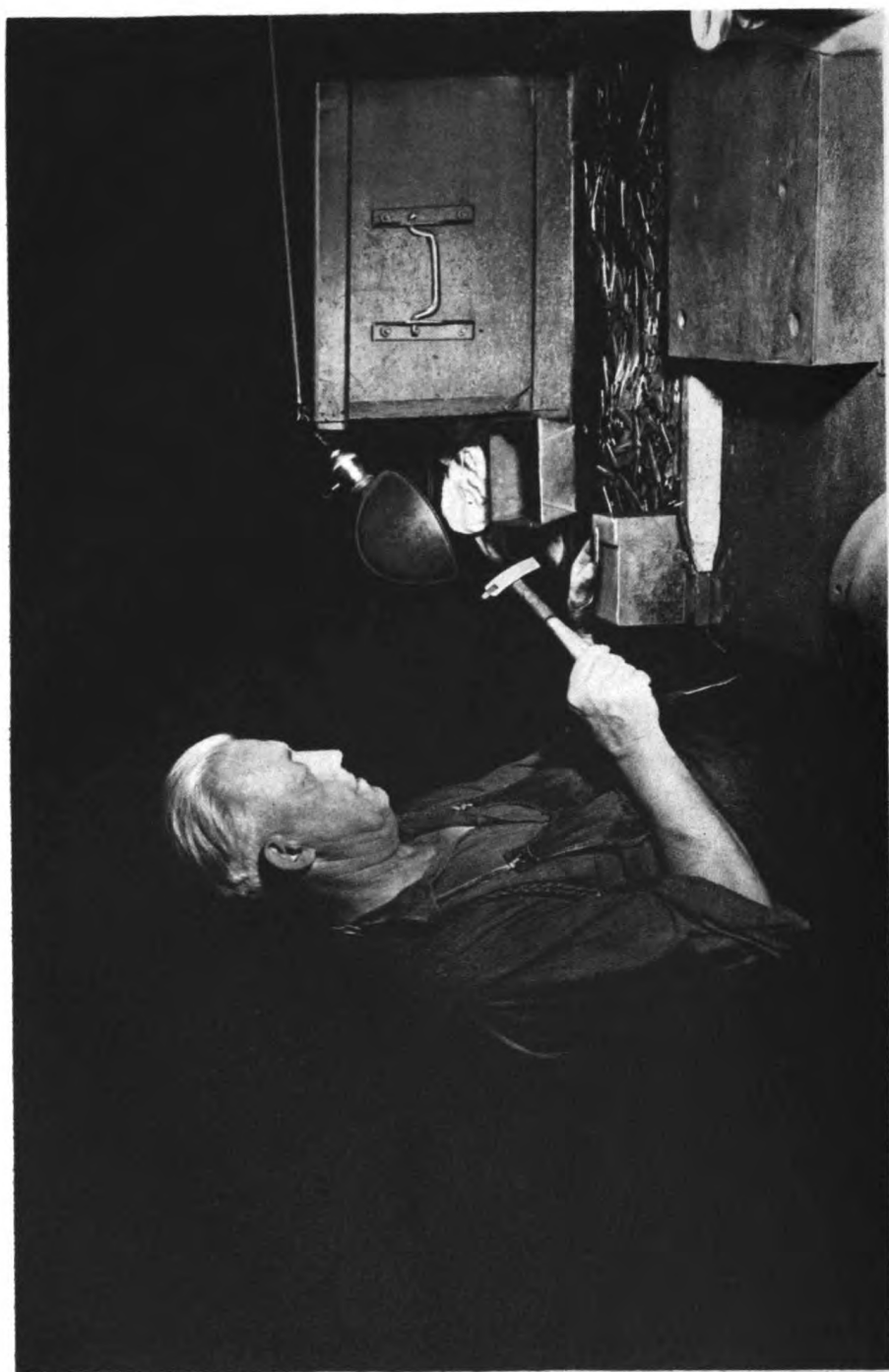


HEAT-TREATING BLADES  
*The Steel is Hardened and Tempered*

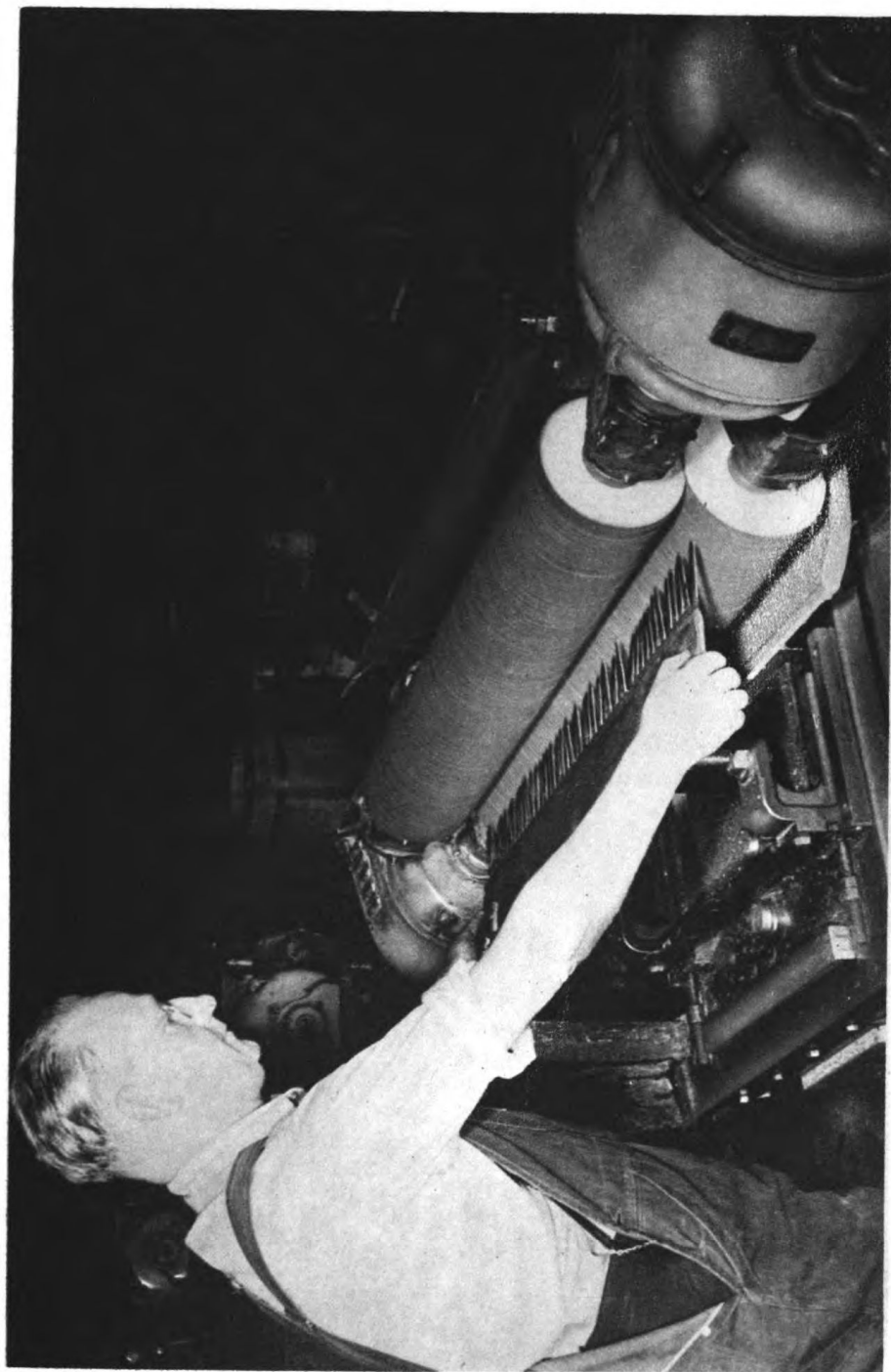


AUTOMATIC GRINDING  
*Each Operator Watches Four Machines*





STRAIGHTENING BLADES  
*The Machine Age Hasn't Supplanted Him*



**BUFFING BLADES**  
*Forty-four at a Time, for High Polish*



WOMAN IN WAR WORK  
*Drilling Assembly Holes*



SPOT-WELDING MACHETES



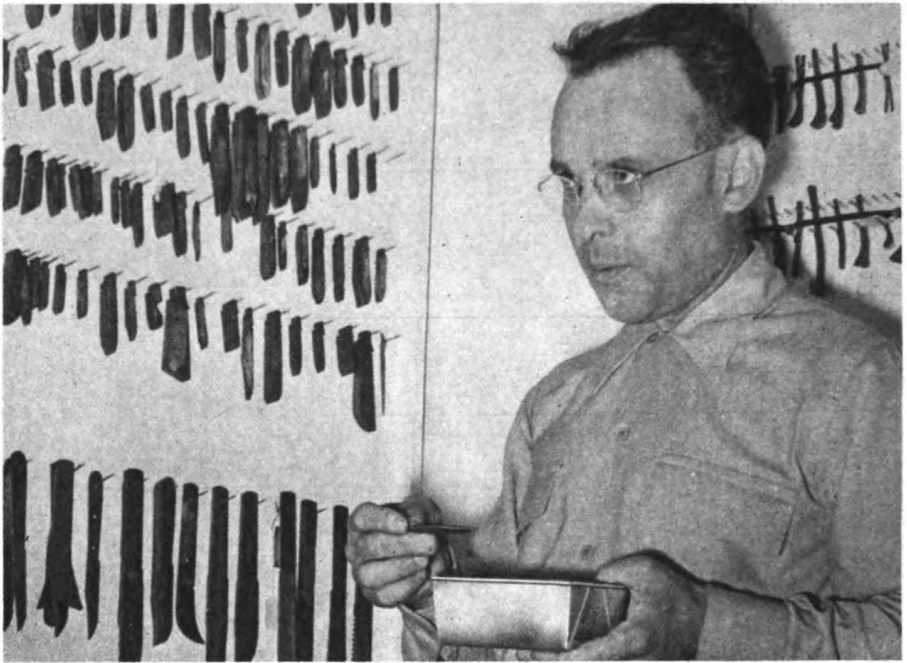
THE CUTLER'S EYE IS SUPERB  
*Making a Knife "Walk and Talk"*



**STANLEY S. SMITH**  
*Planning Division*



**W. DEAN WALLACE**  
*Engineering*



**MAURICE S. SHARE**  
*Superintendent*



**JOSEPH P. LOWENTHAL**  
*Office Manager in Camillus*



Again, in the case of automatic or semi-automatic grinders, the machines are set to prevent frictional burning of the stock, for if that should happen the temper would be drawn, the blade would become soft and would fail to hold its edge. But in the first place, the steel has to be excellent.

The proportion of carbon content determines the degree of hardness which steel can attain and its capacity for taking on a keen edge. Camillus buys high-grade cutlery steel, metallurgically analyzed — for blades a carbon content range of 1.0 percent to 1.1 percent, for springs from 0.80 percent to 0.95 percent, subject to a micrograph checkup after hardening to show a specific character of “fracture grain.”

How, in fact, is raw steel transformed into the modern, shining pocketknife? After arriving from the steel mill it is bathed in oil and stored until fed to the machines to be blanked out into blades, blade tools, and springs, the gage or thickness of the spring corresponding to that of the blade it will operate. Blades are blanked between dies set at a slight angle conforming to the desired taper. It is as though a diamond has been roughly cut to size and shape and is waiting to pass through the stages which will carry it to functional beauty. Before heat-treating, irregularities are trimmed off and the blade is levelled, and after hardening it is straightened, ground, and bevelled at the tip. As good as the practiced hand which gives a hammer-tap for straightening is the practiced ear which listens for a true ring as the blade is tested on a block.

Gone are the days when the harassed cutler hand-filed



the tang in a laborious effort by trial and error to make it articulate in the assembled knife. Each component part is made to specified dimensions, uniform to the thousandth of an inch. After grinding comes buffing of blade backs and tangs, glazing of the sides, general polishing, and then sharpening to a uniformly keen edge. Now the tang is engraved with the proud trademark—the guarantee of quality.

The spring, the blade's companion in action, experiences a similar series of handlings before becoming a worthy one. The spring is blanked according to a pattern befitting the type of blade which will travel on it; is then cropped and punched in one operation; levelled, strung in bunches for heat-treatment, and polished with special attention to the inside surface where it meets the tang. The end of the spring is so shaped as to allow for unobstructed blade channels.

In time, blade and spring will be assembled with hard brass linings, all held firmly between covers by sturdy bolsters at both ends and further reinforced by rivets along the length. The bolsters have been blanked, forged, trimmed, punched, and matched with the scales (linings), which have been blanked out of brass rolls and likewise punched to receive the rivets. A number of operations take place in the assembling before the shield is affixed, the pins nipped and riveted, the handle glazed for smoothness.

In cutler's language the knife is now nailed up. The machine has not displaced the cutler; and never will. His

fine eye and skilful hand are still needed to make the knife "walk and talk." The work of the modern cutler is far superior in exactness of execution to that of his celebrated ancestors.

Various tasks remain to be done in the finishing department. The backs of the knives must be ground smooth to remove any slight amount of material protruding from springs or scales; there is rough-glazing and fine-glazing; inspection, sharpening, cleaning, oiling, wiping. Final buffing imparts the high finish which makes the knife mighty good to look at.

Now the knife goes out into the world to begin its life of usefulness and to honor its parentage. A thousand-odd services it will render, from the practical to the sentimental, including perhaps carving a sweetheart's initials on a rail fence. Each type of knife will serve its master. If an army engineer's knife, for example, it must—to quote official specifications—"withstand the hard usage in the military field service."

## VI

### *In Peace and War*

TO UNDERSTAND the inner being of the man who directed the destinies of the company it is worth considering a confession of faith written while an evil force in Europe was plotting destruction of liberty. Alfred Kastor wrote this in the 1934 Yearbook of his Harvard class:

*I am anti-Hitler for obvious reasons. Surely the hope of the world is liberalism in thought and action, and anything that tends to restrain the tenor of man's freedom of thought is subversive of cultural progress and enlightenment.*

Within the next few years the brute menace became plainer to the world and flared in the thunderous dawn of a new era of violence. Long before Pearl Harbor, Mr. Kastor realized that the United States would be drawn into the war and that a huge war production program would be required in order to fight Hitler with our industrial might. The future policy of the company must be shaped to meet the inevitable.

In seeking government contracts, despite a sufficiency of business, Camillus Cutlery had two objectives: to participate in war preparations and to place itself in a position

to fulfill its responsibilities when the hour struck. The plant must then be ready for unstinting war service.

The first government award was obtained on January 2, 1940. It called for Navy jack knives, an item already in the Camillus line. From that day the plant worked steadily on government goods, as increased quantities were ordered and contracts were received from the Signal Corps, the Engineer Corps, and other branches of the armed services. Manufacturing of merchandise for civilian customers necessarily diminished. By October, 1941, it was reduced twenty percent.

Barely six months after our entry into the war Camillus was giving half of its production to the Government. There had been no necessity for conversion. No department was shut down for a changeover. Precious time had not been lost. The know-how to meet rigid specifications was an integral part of the company's resources, and it possessed facilities for mass output and delivery on the dot. Camillus could make knives to withstand the toughest tests in history—rigorous combat duty and field service in every climate.

The Army, the Navy, the Maritime Commission, and Lend-Lease demanded more and more knives—for demolition kits, medical kits, aviators' kits, electricians' kits; knives with tools, knives with marlin spikes. The pocket-knife attained a new status—as indispensable equipment for all men in uniform. Camillus was called upon to under-

take new things. The Marine Corps urged it to duplicate the British Commando knife, a stiletto with a seven-inch blade. The Army and Navy needed paring knives, large butcher knives, bread knives, spatulas, surgical bistouries and tenotomes. The Air Corps turned to Camillus to produce folding machetes and sheath knives for Asiatic kits so that crashed aviators could hack their way through the jungle.

The tremendous quantities required, produced, and delivered were wrought by little short of a miracle. It was a miracle of faith, brains, and strenuous effort. Production was ninety percent for the Government by October, 1942. For the year it was stepped up to 599,056 dozen knives. The dollar production nearly doubled with only a twenty percent increase in personnel. These 486 employees turned out 1,232 dozen per capita, the highest average on record. Truly a masterwork of economy.

For eighteen months a large part of the plant was given over to tool knives for the Engineers Corps. The factory was short both on hands and on space. Bottlenecks became general but were quickly overcome by designing and building special machinery. Another feat of Camillus engineering was performed on the Commando knife. The British model was reproduced with a much simpler construction, maintaining the exact balance and dimensions, and the cost was reduced by half!

New methods were developed for producing the machetes and sheath knives, and the entire order was deliv-

ered one month ahead of schedule. The saving, amounting to \$50,000, was voluntarily passed on to the Government in the form of a lower price.

Government agencies drew on Camillus' experience for the preparation of new specifications and in connection with other technical matters. The company was selected to design several new ordnance knives. As the stiletto, a single-purpose knife, was outmoded, a new fighting knife was created for the Marines. Army and Navy ordnance had dire need of an all-purpose knife, strong enough to serve as a weapon and capable also of splitting kindling and digging foxholes. The construction battalions of the Navy (Seabees) required a special general-utility knife. Camillus mastered these problems, involving *inter alia* a fresh approach to the technique of shaping handles; built new machines, and turned over the designs to other manufacturers. The originality of the dies saved the Government many tons of steel and speeded production on critical implements of war.

There was no letup. The heartbreaking story of Captain Eddie Rickenbacker and his comrades adrift in the South Pacific spurred a demand for more adequate life-raft equipment, and the Camillus fish knife (with shackle, hook remover, and scale remover) was adopted by the Air Forces of both the Army and the Navy. The Maritime Service recognized the Camillus sailor knife (with its large sailor blade) as essential in the equipment of life rafts and boats. Thousands of these were shipped monthly.

The Quartermaster Department took nearly half a million pocketknives for issue and for resale at post exchanges.

The sum total delivered to Uncle Sam's fighting forces up to August, 1943, was 6,466,800 knives . . .

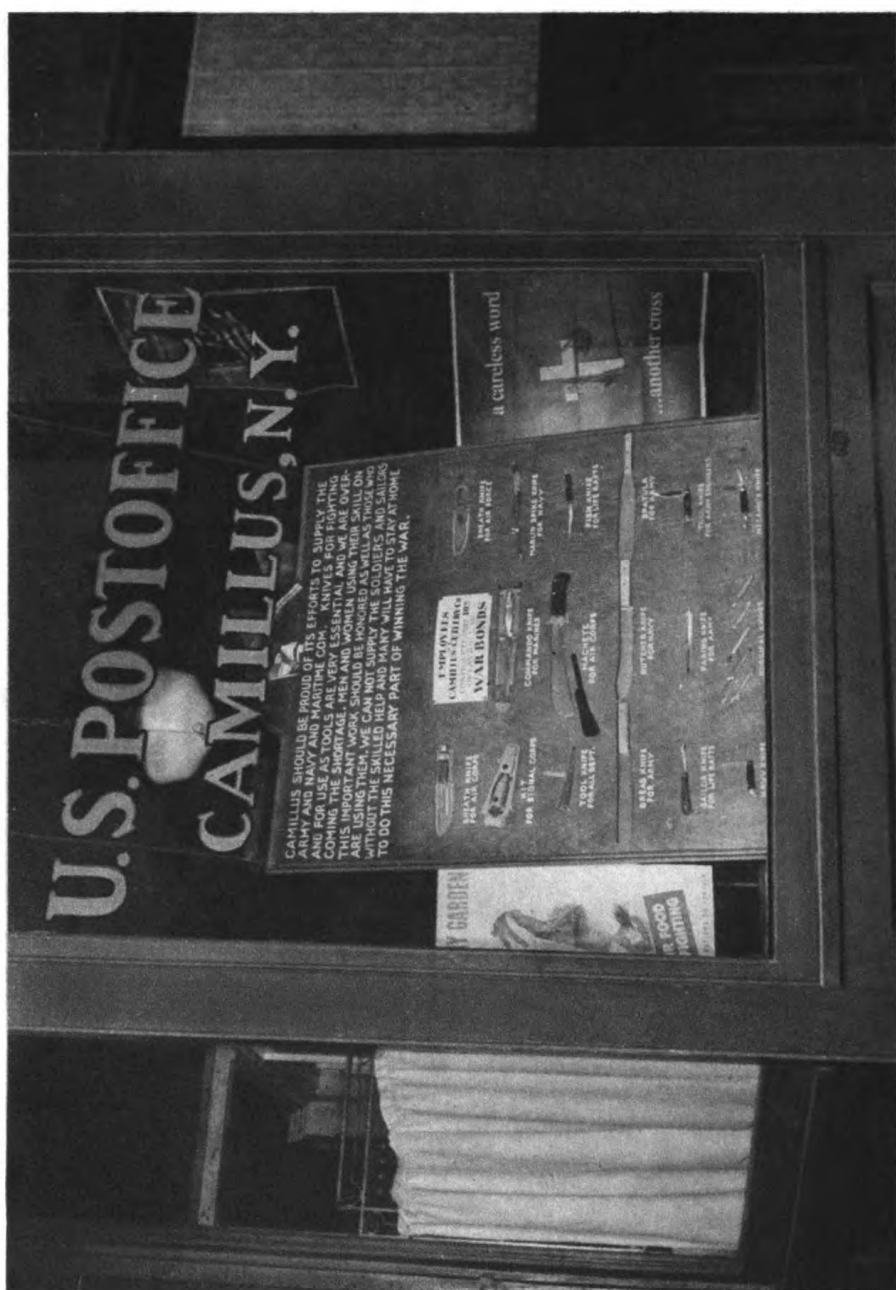
Shipped out of the little Village of Camillus, a peaceful countryside whose sinews epitomized the giant strength of America.

A village of scarcely more than eleven hundred souls had become a fighting home front. The various drives, volunteer services, war stamp and bond buying campaigns, all found the inhabitants doing their full share with ardor. Among those who departed for military service were seventy-six men and four women, their family names indicating the various racial strains which made up Camillus. They left the company's payroll and went on its honor roll. The factory, so intimately entwined with the life of the community, was its natural channel for patriotic expression. Whole families, in some cases three generations, swung into action and marched home wearing identification buttons. School teachers pitched in during vacation. A local clergyman devoted four days each week to labor in the shipping room. The manager's wife lost her servant to the factory. Housewives who could not leave their cares for a full shift went in to work part-time. A typical sight in the plant was a mother attending to four automatic grinders with as much ease and expertness as if she were moving about in her own kitchen. This community's mo-



SIGNAL CORPS OFFICER INSPECTS A KNIFE  
*The Old Glazer Looks Up for Approval*





THE VILLAGE OF CAMILLUS IS PROUD

rale needed no lift: Camillus knives, the famous Sword Brand, were slashing to victory.

The first cup of glory was filled when a young captain of the Marine Corps, John P. Salmon, of Syracuse, was decorated for heroism at Guadalcanal and wrote home to his father: "Tell Mr. Wallace that one of his knives saved my skin once."

It must have given a deep thrill each time a former employee opened the large blade of his issue knife and examined the tang to discover the imprint of a familiar name. The boys sent letters. "I have one of your Navy knives," wrote a sailor on the *U. S. S. Monongahela*, "and it will probably interest you to know that they stand up very well under hard usage." And this from another ex-employee: "Our electrician's and 44SP Navy knives are being used here in the Air Corps and are doing a wonderful job." From a soldier in an ordnance school came a report after a stretch of K. P.: "I had the honor of using some of those bread and butcher knives which I helped to heat-treat and forge and believe me, they certainly give a good account of themselves."

As the war progressed, newspaper headlines on dispatches from the front told of infantrymen of the American Second Army Corps grappling hand-to-hand with knives in the bitterest fighting through the rocky bastions of North Tunisia. Others were cutting their way through cactus hedges with machetes. American Rangers training

in Scotland were being provided with the new ordnance knives for the eventual invasion. Plane-wrecked aviators, tossing on the South Seas, drew their merciful knives to spear fish. For daily needs, in daily emergencies, a knife!

There came a letter from a seaman in the Coast Guard: "We are using your Navy knives every day and find they are very satisfactory . . . hope that things are running along smoothly at the factory."

Yes, they were. The circumstances were most trying. Materials, such as handle bone from Argentina, had to be procured in the face of adverse market conditions and transportation difficulties. The planning department had to be reorganized and production accurately scheduled despite a shortage of trained help. Engineering problems had to be surmounted. All of this was done, with skill, by four key men working under Mr. Wallace: Stanley S. Smith, Joseph P. Lowenthal, Dean Wallace, and Maurice Share. Upon these four men and Mr. Wallace fell the burden of multifarious manufacturing details and personnel work now covering nearly six hundred employees.

Women and girls constituted about forty-five percent of this number. They put on hairnets, changed to flat shoes, and learned fast. To their credit it may be recorded that they proved able to perform every operation formerly considered exclusively a man's job. Without them the factory could not have accomplished the completion of government work.

Under the enlightened labor policy laid down by Mr.

Kastor and Mr. Wallace, high labor standards were maintained, considerably in excess of legal requirements. Wages were the highest ever paid in the industry; they rose with the increased cost of living and were thirty percent above the January 1941 level at the time the National War Labor Board issued its freezing order. And yet, by scientific management, the factory was able to produce at a lowered cost. Most of the employees were on straight piece-rates—masters of their own time, stopping for a rest when they wanted to, and loyally measuring up to their obligations as the management met its own. Here was an example of democracy in daily practice.

There was honor enough in the knowledge that they played a vital part in the world struggle; that the ability of American industry to achieve production for total war ruined the enemy's hopes for victory. But the Army and Navy decided in the summer of 1943 to bestow upon Camillus the Army-Navy Production Award for—to quote Under Secretary of War Robert P. Patterson—“great accomplishment in the production of war equipment.”\* The eligibility requirements for the award were so stringent that the number of war plants which had received it totaled less than two and one-half percent. The “E” pennant of excellence to be flown above this plant

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\* Statistically the Camillus war record from January, 1940, to August 13, 1943, is expressed in the following figures: 1,513,000 Navy jack knives, 1,375,000 engineers knives, 1,200,000 electricians knives, 977,000 Air Corps knives, 400,000 quartermaster knives, 325,000 sailor knives, 200,000 fighting and utility sheath knives, 114,000 folding machetes, and large quantities of other types.

would symbolize the nation's appreciation of the men and women of Camillus.

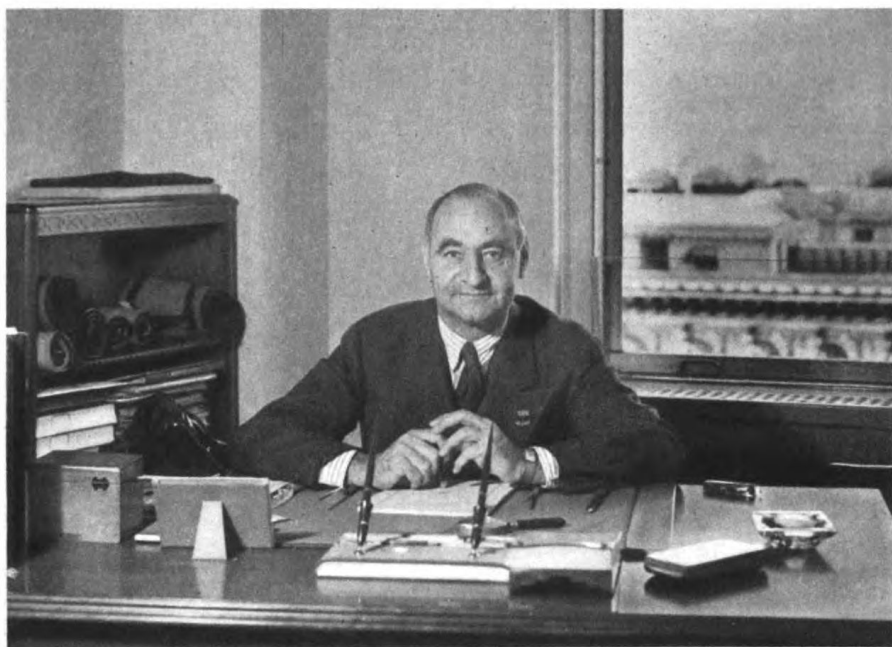
August 17, 1943, was a thrilling and memorable day. The stage was set for a program of ceremonies to be held in the company's large recreation hall between shifts. The room was soon filled with the eager, solemn hundreds of employees who were to receive "E" pins as a mark of distinguished service to their country. The band of the Syracuse Army Air Base made the hall throb with spirited rhythm. Army and Navy officers and company officials took seats on the dais. The assembly sang. A color guard accompanied the presentation of the coveted pennant. Lieut. Col. Roswell P. Rosengren\* told the audience they were heroes of the production line, a "second front" without which no fighting front was possible. He said:

*The story you have written here in work and sweat is a shining example of what every American manufacturer can do in the war effort. It is a story of the impossible conquered in less time than it once took to lick the difficult. It is a story of heartbreaking experiment and a complete change in the methods of manufacture, in the never-ending quest for greater speed, finer quality, and ever-increased quantity.*

*It is a story that literally cuts its way toward Tokyo*

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\* Chief, Office of Technical Information, Office of the Chief of Engineers, Washington, D. C. He had come himself to bestow the award upon Camillus instead of following his usual course of assigning a junior officer. Lieut. Col. Rosengren represented Under Secretary of War Patterson, Under Secretary of the Navy James V. Forrestal, and Major General Eugene Reybold, Chief of Engineers.



ROBERT N. KASTOR  
*Treasurer and Salesmanager*



ROBERT F. LUCE  
*Assistant to the President*



**HARRY K. ZUST**  
*In the Sales Department Since 1885*



**EMANUEL M. NETTER**  
*Bookkeeper in New York Since 1896*

*from the South Pacific and over the long wilderness fastnesses of the Alaska Highway, from which I have just returned. It is a story of the tortuous mountain-road trails of Sicily and will become a part of the story of every advance, from whatever angle, converging on Berlin.*

*A thousand uses of your knives are employed by the Engineers in the forefront of amphibious, air, overland and river-crossing operations. Those uses are multiplied by the Navy, the Air Forces, the Marines.*

*Those are the things which have been made possible by you men and women here: technicians, labor, and management.*

He paid tribute to "the power of your spirit, your morale, your ingenuity, and a cooperation which is reflected in your well-knit, enterprising community and working force." Lieut. Col. Rosengren continued:

*You have always enjoyed a reputation for the manufacture of superior quality knives. Now you have multiplied your production sixteen times and yet quality has remained uniformly superior. Shipments on every contract have been made in exact accordance with delivery requirements. The quality was of the highest order because of each individual worker's pride in his job and through the most modern equipment methods available.*



The cup of praise was full indeed. And the speaker, again emphasizing the workers' part in winning the war, declared that "those knives are as indispensable to every segment of our Services as your peace-time production was to the boys and men of America."

Finally, departing from his prepared address, the spokesman for the Government made this inspiring assertion:

"If we would look in America for the pattern of the future, let America come to Camillus and look at what you are doing here."

\* \* \*

Planning for peace in the midst of war work, Mr. Kastor advised his colleagues to think in terms of maintaining large employment and seeking a richer life for the Camillus family. Fortunately there would be no necessity for reconversion as there had been none for conversion. The factory's heaviest production was in articles which it already had been making. The new techniques and machinery devised to cope with that extraordinary task would remain as a legacy in the resumption of manufacture for civilian needs, and the whole remarkable experience would insure better goods. The resourcefulness and flexibility of the plant must be matched by vision and initiative. For the American Way is dedicated to an unceasing striving for fuller living and security. And Camillus, in its own little corner of America, is a custodian of that spirit.







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